FORM PTO-1390 (REV 5-93) | U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE | ATTORNEY'S DOCKET NUMBER 1318/49872

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

US APPLICATION NO. (if known, see 37 CFR 1.5) 09/831164

JC17 Rec'd PCT/PTO 07 MAY 2001

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP00/08619	September 4, 2000	September 6, 1999

TITLE OF INVENTION
AUTOMATIC DOOR OR WINDOW SYSTEM

APPLICANT(S) FOR DO/EO/US
Guenter ANDRASCHKO, Eugen Christian KATZ and Matthias HUCKER

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371

3. [ ] This express request to begin national examination procedures (35 U.S.C. 371(f) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).

4. [ ] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2)).

   a. [X] is transmitted herewith (required only if not transmitted by the International Bureau).

   b. [ ] has been transmitted by the International Bureau

   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US)

6. [X] A translation of the International Application into English (35 U.S.C. 371(c)(2)).

7. [X] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))

   a. [X] are transmitted herewith (required only if not transmitted by the International Bureau).

   b. [ ] have been transmitted by the International Bureau.

   c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.

   d. [ ] have not been made and will not be made.

8. [X] A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. [X] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)) (Unexecuted).

10. [ ] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Item 11. to 16. below concern other document(s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. [X] A FIRST preliminary amendment.

    [ ] A SECOND or SUBSEQUENT preliminary amendment.

14. [X] A substitute specification.

15. [ ] A change of power of attorney and/or address letter.

16. [X] Other items or information:
    4 Sheets of Drawings showing Figs. 1-4

U.S. APPLICATION NO (If known, see 37 CFR 1.5) 09/831164	INTERNATIONAL APPLICATION NO PCT/EP00/08619	ATTORNEY'S DOCKET NUMBER 1318/49872

17. [ ] The following fees are submitted:	CALCULATIONS	PTO USE ONLY
Basic National Fee (37 CFR 1.492(a)(1)-(5)):		
Search Report has been prepared by the EPO or JPO . . . . . $860.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) . . . . . $690.00 No international preliminary examination fee paid to USPTO (37 CFR 1.482)	$860.00	
but international search fee paid to USPTO (37 CFR 1.445(a)(2) . . . . . $710.00 Neither international preliminary examination fee (37 CFR 1.482) nor	$0.00	
international search fee (37CFR 1.445(a)(2) paid to USPTO . . . . . $1000.00 International preliminary examination fee paid to USPTO (37 CFR 1.482)		
and all claims satisfied provisions of PCT Article 33(2)-(4) $100.00		
ENTER APPROPRIATE BASIC FEE AMOUNT =	$860.00	
Surcharge of $130.00 for furnishing the oath or declaration later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$130.00	

Claims	Number Filed	Number Extra	Rate		
Total Claims	55-20=	35	X $18.00	$630.00	
Independent Claims	3-3=	0	X $80.00	$0.00	
Multiple dependent claims(s) (if applicable)			+ $270.00	$	
			TOTAL OF ABOVE CALCULATIONS =	$1,620.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				$	
			SUBTOTAL =	$	
Processing fee of $130.00 for furnishing the English translation later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				$	
			TOTAL NATIONAL FEE =	$	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28,3.31). $40.00 per property +				$	
			TOTAL FEE ENCLOSED =	$.00	
			Amount to be: refunded		$
			charged		$

a. [ ] Two checks in the amount of $_____ for the filing fee and $40.00 for the assignment recording fee are enclosed
b. [X] Please charge my Deposit Account No. 05-2323 in the amount of $1,620.00 to cover the above fees. A duplicate copy of this sheet is enclosed.
c. [X] The Commissioner is hereby authorized to charge any additional fees, which may be required, or credit any overpayment to Deposit Account No. 05-1323. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:
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SIGNATURE
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NAME
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REGISTRATION NUMBER
May 7, 2001
DATE

Attorney Docket: 1318/49872
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: GUENTER ANDRASCHKO ET AL.

Serial No.: Not Assigned PCT No: PCT/EP00/08619

Filed: May 7, 2001 Examiner: Not Assigned

Title: AUTOMATIC DOOR OR WINDOW SYSTEM

PRELIMINARY AMENDMENT

May 7, 2001

Box PCT
Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to the examination and calculation of fees, please preliminarily amend the above-identified application as follows:

IN THE SPECIFICATION

Attached are a Substitute Specification, a marked-up copy of the specification, and a translation of the application from German.

IN THE CLAIMS

Please cancel Claims 1-39 without prejudice.

Please add new claims 40-94 as follows:

40. (New) Automatic door or window system with a drive and with a displaceable driven wing,

wherein the drive comprises:

a fixedly mounted slide track, wherein the wing is displaced in the slide track guided by cam rollers of at least one reel car,

an electric drive unit for driving the wing arranged on a fixedly mounted carrier, or on a part connected therewith, having an electric drive motor,

as well as several electric functional units, which include one of, power supply units, locking devices and emergency power supply units, arranged on a fixedly mounted carrier,

a bus arrangement, which is configured for data or signal transmission between the electric functional units or between the electric functional units and the drive unit,

and wherein

the slide track or a part connected to the slide track, which include, a housing of the drive, has a groove for holding the bus arrangement.

41. (New) Automatic door or window system according to claim 40, wherein the bus arrangement is arranged on or in the slide track or on a part connected to the slide track.

42. (New) Automatic door or window system according to claim 40, wherein the bus arrangement extends in the axial direction

of the slide track over a large part of the length of the slide track .

43. (New) Automatic door or window system according to claim 40, wherein the bus arrangement is configured so that the electric functional units are optionally arranged in an axial position to the bus arrangement.

44. (New) Automatic door or window system according to claim 40, wherein the bus arrangement has a ribbon cable.

45. (New) Automatic door or window system according to claim 40, wherein the slide track has a profile housing which is one of rectangular, U-shaped or L-shaped in cross section, which is configured as a box-shaped profile housing.

46. (New) Automatic door or window system according to claim 40, wherein at least one of the electric functional units has a clamping arrangement for the connection of the electric functional unit on the bus arrangement.

47. (New) Automatic door or window system according to claim 46, wherein the clamping arrangement is configured on the

electric functional unit to be attached to or be one piece with said electric functional unit.

48. (New) Automatic door or window system according to claim 46, wherein the clamping arrangement is configured separately and is connected via an electric cable to the electric functional unit .

49. (New) Automatic door or window system according to claim 46, wherein the clamping arrangement has at least one contacting dome which is automatically produced when the clamping arrangement is mechanically attached to the bus arrangement.

50. (New) Automatic door or window system according to claim 46, wherein the clamping arrangement is configured so as to be asymmetric to provide a connection to the bus arrangement which is free of polarity inversions.

51. (New) Automatic door or window system according to claim 40, wherein the bus arrangement has at least one electric line.

52. (New) Automatic door or window system according to claim 40, wherein the bus arrangement has an elastic rubber-like

isolation, in which elastic line or the electric lines are guided.

53. (New) Automatic door or window system according to claim 52, wherein the elastic rubber-like isolation is configured to automatically cover an area of a contact point after removal of a contacting domes.

54. (New) Automatic door or window system according to claim 40, wherein the bus arrangement has a mechanical attachment fixture for mechanically fixing the electric functional units.

55. (New) Automatic door or window system according to claim 54, wherein the clamping arrangement is configured so that the electric connection to the bus arrangement takes place simultaneously with the mechanical fixing of the electric functional units to the mechanical attachment fixture.

56. (New) Automatic door or window system according to claim 54, wherein the clamping arrangement is configured as a part of the mechanical attachment fixture or replaces said mechanical attachment fixture.

57. (New) Automatic door or window system according to claim 54, wherein the bus arrangement has a two-wire bus whereby the bus arrangement is configured for data and signals transmission and power supply via the same electric lines.

58. (New) Automatic door or window system according to claim 40, wherein the bus arrangement has a multiwire bus.

59. (New) Automatic door or window system according to claim 40, wherein the bus arrangement is configured for connection to a building control system.

60. (New) Automatic door or window system according to claim 40, wherein the slide track is configured so as to be electrically conducting and has a part of the bus arrangement.

61. (New) Automatic door or window system according to claim 40, wherein the bus arrangement is configured for connection to the electric functional units having integrated intelligence.

62. (New) Automatic door or window system according to claim 40, wherein at least one of the electric functional units has integrated intelligence.

63. (New) Automatic door or window system according to claim 40, wherein the electric drive unit is configured as a bus master.

64. (New) Automatic door or window system according to claim 40, wherein the electric drive unit has an electric control unit and at least one drive motor controlled by the control unit.

65. (New) Automatic door or window system according to claim 40, wherein the electric drive unit is configured for at least one of automatically recognizing, addressing, programming, initializing, and inquiring the connected electric functional units.

66. (New) Automatic door or window system according to claim 64, wherein the control unit is connected to the bus arrangement.

67. (New) Automatic door or window system according to claim 64, wherein the control unit coacts with the bus arrangement and is configured for at least one of automatically recognizing, addressing, programming, initializing, and inquiring the electric functional units connected to the bus arrangement.

68. (New) Automatic door or window system according to claim 40, wherein at least one of the electric functional units has a response unit which is configured so as to be automatically at least one of recognized, addressed, programmed, initialized, and inquired.

69. (New) Automatic door or window system according to claim 40, wherein one of the electric functional units is configured as a redundant safety device for monitoring or replacing the control unit of the drive unit.

70. (New) Automatic door or window system according to claim 40, wherein at least one of the electric functional units has a monitoring device, which is configured for one of monitoring of the electric functional unit, for transmitting status messages and for transmitting error messages.

71. (New) Automatic door or window system according to claim 40, wherein one of the electric functional units is configured as an intelligent terminal field for connecting conventionally wired components.

72. (New) Automatic door or window system according to claim 40, wherein one of the electric functional units is configured as a sensor device.

73. (New) Automatic door or window system according to claim 72, wherein the sensor device is configured so as to be programmable or adjustable.

74. (New) Automatic door or window system according to claim 72, wherein the sensor device is configured so as to be programmable or adjustable, whereby a sensitivity or directional characteristic of the sensor device is adjustable via the bus arrangement.

75. (New) Automatic door or window system according to claim 40, wherein an operating arrangement is provided, which has a controller and is arranged outside of the housing.

76. (New) Automatic door or window system according to claim 75, wherein the operating arrangement is configured for connection to the bus arrangement.

77. (New) Automatic door or window system according to claim 75, wherein the operating arrangement is configured for at least

one of adjustment, programming of parameters or modes of operation, and display or storage of status messages or services data.

78. (New) Automatic door or window system according to claim 40, wherein at least two of the functional units can be optionally selected or combined with each other to produce different embodiments of sliding door drives.

79. (New) Automatic door or window system according to claim 46, wherein the clamping arrangement is a suspended clamping arrangement.

80. (New) Automatic door or window system according to claim 46, wherein the clamping arrangement is one of screwable clamping arrangement and a clippable clamping arrangement.

81. (New) Automatic door or window system according to claim 57, wherein the two-wire bus is a CE bus.

82. (New) Automatic door or window system according to claim 57, wherein the two-wire bus is a LON powerline.

83. (New) Automatic door or window system according to claim 58, wherein the multiwire bus is a ASI.

84. (New) Automatic door or window system according to claim 58, wherein the multiwire bus is a CAN.

85. (New) Automatic door or window system according to claim 59, wherein the building controls system is a EIB.

86. (New) Automatic door or window system according to claim 40, wherein the bus arrangement is configured for connection to the electric functional units without integrated intelligence.

87. (New) Automatic door or window system according to claim 40, wherein at least one of the electric functional units has a microprocessor.

88. (New) Automatic door or window system according to claim 64, wherein the electric control unit has a microprocessor.

89. (New) Automatic door or window system according to claim 72, wherein the sensor device is a motion sensor.

90. (New) Automatic door or window system according to claim 72, wherein the sensor device is a photoelectric barrier.

91. (New) A drive for an automatic door system with a displaceable driven wing, comprising:

a fixedly mounted side track wherein the wing is displaceably guided in the slide track via cam rollers of at least one reel car,

an electric drive unit for driving the wing operatively arranged on the slide track which has an electric drive motor,

at least two electric functional units, which are at least one of a power supply unit, a locking device and an emergency power supply unit, operatively arranged on the side track, and

a bus arrangement, which is configured for data and signal transmission between the electric functional units,

wherein a housing of the drive is connected to the slide track, and the slide track has a groove for holding the bus arrangement.

92. (New) A drive according to claim 91, wherein the groove is on the housing.

93. (New) A drive according to claim 91, wherein the bus arrangement is configured for data and signal transmission between the electric functional units and the drive unit.

94. (New) A method of making an automatic door system with a sliding door drive and a displaceable driven wing, comprising:

providing said sliding door drive,

fixedly mounting a slide track as part of said drive so that the wing is displaceable in the slide track guided by cam rollers of at least one reel car,

arranging an electric drive unit for driving the wing on the fixedly mounted slide track which has an electric drive motor,

providing at least two electric functional units which include one of power supply units, locking devices and emergency power supply units, arranged on the slide track, and

providing a bus arrangement which is configured for data or signal transmission between the electric functional units or between the electric functional units and the drive unit,

wherein the slide track has a groove for holding the bus arrangement.

IN THE ABSTRACT

Please cancel the Abstract in its entirety and substitute the new Abstract of the Disclosure submitted herewith on a separate, unnumbered page.

REMARKS

It is respectfully submitted that the above amendments be entered prior to the examination and calculation of the filing fee.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #1318/49872).

Respectfully submitted,

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--ABSTRACT OF THE DISCLOSURE

An automatic door or window system is described, which has a sliding door drive and two counter-sliding driven sliding wings. On the slide track of the drive are arranged several electric functional units and the drive unit. The sliding wing is displaceably guided via reel cars in the slide track. To obtain a simple construction and a universal utilization of the door or window system, the slide track has a bus arrangement for data and/or signal transmission between the electric functional units and/or between the electric functional units and the drive unit.--

Attorney Docket No. 1318/49872
PCT Application No. PCT/EP 00/08619
Clean Copy of Substitute Specification

AUTOMATIC DOOR OR WINDOW SYSTEM

BACKGROUND AND SUMMARY OF THE INVENTION

[0001] The invention concerns an automatic door or window system with a drive, preferably a sliding door drive, and with a displaceable driven wing, preferably a sliding wing or folding wing, wherein the drive has the following components: a fixedly mounted slide track, wherein the wing is preferably displaced in the slide track guided by cam rollers of at least one reel car, an electric drive unit for driving the wing arranged on a fixedly mounted carrier, preferably on the slide track, or on a part connected therewith, having an electric drive motor, as well as several electric functional units, for example, power supply units and/or locking devices and/or emergency power supply units, arranged on a fixedly mounted carrier, preferably on a slide track or on a part connected to the slide track.

[0002] An automatic door or window system such as this is known from German patent publication DE 298 19 342. It is an automatic sliding door system. The drive motor, the electric control, and other electric components such as the locking and control sensors in this known system are mounted on the fixedly mounted slide track of the sliding wing. The electric components are electrically connected with each other via a

cable connection. When producing and assembling the drive, this has as a consequence a relatively high effort for producing the electric connection. The cable connection also requires a large construction space.

[0003] In other differently built known automatic door systems such as, for example, those described in European patent publication EP 0 597 208 A1, a sliding wing system driven by an electric motor is known. The sliding wings are guided partition wall elements that can be displaced in a slide track via a reel car. The drive motors are mounted on the reel car. The outgoing shaft of the drive motor is operationally coupled to a shaft of the cam roller via a belt drive and a planetary drive. The power supply of the wing-fixed drive motors takes place via current collectors that measured up a bus bar arranged on the ceiling in the interior of the slide track profile. Aside from the drive motors, no other electric components are provided on or in the movable wing in this arrangement so that the bus bar serves merely for the transmission of energy to the drive motors.

[0004] From the international patent publication WO 99/04 122 is known another automatic sliding door system. On the wings and on the slide track are arranged electric components. Especially the drive motor is fixedly arranged on the wing or the reel car and the control unit is fixedly arranged on the

slide track. A bus bar is provided for supplying the power and signal transmission from the fixed electric control to the movable drive motor. The current collection of the motor takes place via collecting contacts or via the cam rollers of the reel car. In each case, the bus bar is arranged in the slide track so that the connection of other electric components to the bus bar can only be realized with difficulty. The supplementary connection of other electric components is not provided.

[0005] The object of the invention is to provide an automatic door or window system which is more simply built and more universally utilizable.

[0006] This object is attained, according to the invention, via a bus arrangement, which is configured for data or signal transmission between the electric functional units or between the electric functional units and the drive unit, and wherein the slide track or a part connected to the slide track, which include a housing of the drive, has a groove for holding the bus arrangement.

[0007] The automatic door or window system can be arranged on a fixed mountable carrier. It has a slide track for a displaceable guided wing, preferably a sliding wing or folding wing. On the slide track are arranged a fixedly mountable

electric drive unit as well as other fixedly mountable electric functional units such as, for example, power supply units and/or locking devices and/or emergency power supply units.

[0008] A bus arrangement is provided for the transmission data and/or signal transmission. The data and/or signal transmission can take place between the electric functional units themselves or also between the electric functional units and the electric drive unit. The electric functional units can also be rearranged and/or removed later and/or additional electric functional units can be attached to the bus unit. Supplementary expansions or repairs can be carried out with ease. The drive unit and/or at least one functional unit can have its own intelligence, preferably a microprocessor. The possibility for the bus unit to have different bus protocols for data and/or signal transmission is created via the intelligent components. The functional units can be configured, for example, as a power supply unit and/or an emergency power unit and/or a locking device and/or a sensor device. The drive unit can have the following components: an electric drive motor and/or a control unit, preferably with a microprocessor, for controlling the drive motor and/or a monitoring device for monitoring the function of the control unit and/or the drive unit and/or the bus arrangement. Aside

from the data and/or signal transmission, the power supply can also take place via the bus arrangement.

[0009] In a particularly advantageous embodiment, the drive unit, preferably the control unit with microprocessor, is configured to automatically recognize and/or address and/or initialize and/or program the connected functional units. When connecting a new functional unit to the bus arrangement, the drive unit can automatically recognize and/or program and/or set the parameters of the new functional unit. The functional unit can have a response unit, which can be configured with or without its own intelligence and which can coact with the drive unit via the bus arrangement. The drive unit can also be configured so that the already existing functional units can be reprogrammed and/or newly initialized in accordance with the new functional unit. The installation effort is reduced considerably since with a modification or expansion of the automatic door or window system the adaptation of the functional units and/or the drive units can largely take place automatically. Of course, there is the possibility of conventional manual undertaking or inputting other adaptations and/or programs and/or parameters via a service terminal connected to a bus arrangement.

[0010] The bus arrangement advantageously extends over a large part of the width of the slide track. The bus

arrangement can also extend in an axial direction over the entire width of the slide track. In this way, it is possible to arrange the electric functional units and/or drive units in any desired axial position in the housing.

[0011] The bus arrangement can have a ribbon cable with rectangular cross section and parallel conductors for data and/or signal transmission. In this way, the individual conductors of the ribbon cable can be configured as bus lines. A groove, which is configured as a carrier for the bus arrangement on the profile housing, is advantageously provided. The ribbon cable can be held in the groove, or either one or several parallel conductors can be arranged isolated from each other.

[0012] The connection of the electric function units to the bus arrangement takes place advantageously in a cutting/clamping technique. For this purpose, the electric functional units can have a clamping arrangement. The clamping arrangement can be configured so as to be suspended and/or screwed and/or clipped and has more or less electrically conducting contacting domes, in correspondence to the number and arrangement of the conductors of the bus arrangement. The contacting domes are configured so that, when the clamping arrangement is attached, they cut through the isolation at the

bus arrangement and come into electric contact with a conductor of the bus arrangement.

[0013] The isolation is advantageously made of an elastic rubber-like material so that, after the removal of one electric functional unit, the remaining contact holes are again closed off by the elastic isolation.

[0014] In another embodiment, the electric connection to the bus arrangement can also take place with loop contacts. The conductors then have no or one displaceable isolating cover to make possible the direct electric contact between the loop contacts and the conductors.

[0015] In a particularly advantageous embodiment, the arrangement of the conductors and the complementary arrangement of the contacts to the clamping arrangement can be configured so as to be asymmetrical to exclude a false or polarity-reversed electric connection. It can also be provided to configure the clamping arrangement so as to be asymmetrical, for example, to a pin which engages into a groove of the bus arrangement which is configured on one side of the clamping arrangement.

[0016] The bus arrangement can also have a mechanical attachment fixture, for example, a releasable clip connection

and/or screw connection for mechanically fixing the electric functional units. The clamping arrangement configured for the electric connection is advantageously also a mechanical attachment fitting for the simultaneous mechanical fixing in that, for example, the clamping arrangement has a releasable clip connection and/or screw connection coacting with the bus arrangement.

[0017] The bus arrangement can be configured as a two-wire bus or multi-wire bus. In the configuration as a three-wire or multiwire bus, the power supply and the data and signal transmission take place via different electric lines. Suitable bus systems are, for example, a CAN bus or ASI bus. In the advantageous configuration such as a two-wire bus, the power supply and the data and signal transmission take place via the same lines. Suitable bus systems are, for example, a CE bus or a LON powerline. It can also be conceived to configure the housing of the drive or the slide track to be electrically conducting, for example, as a mass line of the bus arrangement. The housing can then have a part of the bus arrangement, especially a bus line and/or a screening. In the two-wire bus, aside from the housing, only one more conductor must then be provided.

[0018] Several sliding door drives can also be coupled, preferably electrically connected via the bus arrangement.

[0019] The data and signal transmission to the bus arrangement can be configured coded. In this way, a high interference immunity is obtained with respect to the conventional wiring. Via the use of corresponding error-redundant codes, the interference immunity can be further increased.

[0020] The electric functional units can be configured with or without their own intelligence, for example, a microprocessor. In a preferred embodiment, each electric functional unit has its own intelligence. The electric functional units, to increase the operational safety, preferably have their own monitoring unit so as to, for example, detect and report functional malfunctions and/or system disturbances.

[0021] The electric drive unit has a drive motor and a control and/or regulation device that coacts with the motor. The drive unit is preferably configured as a bus master. The drive unit can control the data and signal transmission, as well as also carry out safety and initialization functions. In this way, the electric drive unit can be configured for automatically recognizing and/or addressing and/or setting the parameters of the electric functional units, which are connected to the bus arrangement.

[0022] An electric functional unit can be configured as a redundant safety device. The safety device is configured for the monitoring of the control and/or regulation devices and can take over the function of the control and/or regulation devices when these fail. In this way, the function of the automatic door or window system is ensured, especially an emergency opening of escape or emergency exit doors also when the control and/or regulation device have failed.

[0023] Via an electric functional unit configured as a gateway, the bus arrangement can be connected to a guiding system, preferably a building control system.

[0024] Via an electric functional unit configured as an intelligent terminal field, conventionally wired components such as, for example, a key switch and/or emergency unlocking switch and/or control switch can be connected to the bus arrangement. An embodiment of the intelligent terminal field can also be conceivable, which is arranged outside of the profile housing, for example, behind an assigned switching element in a box mounted underneath.

[0025] An electric functional unit can be configured as a sensor device, preferably with a motion detector and/or photoelectric sensor and/or photoelectric barrier. In a preferred embodiment, the sensor device is configured so as to

be programmable and/or adjustable via the bus arrangement. The sensitivity and/or the directional characteristic can be especially configured so as to be programmable and/or adjustable.

[0026] Furthermore, an operating arrangement can be provided, which is connected to the bus arrangement. The operating arrangement can have an input element, preferably a controller, and a display element, preferably a display. The operating arrangement can be configured for setting the mode of operation, and/or for setting the door parameters, and/or for displaying and storing status messages and/or service data. The operating arrangement can also be configured for programming the electric functional units, for example, a sensor device.

[0027] An electric functional arrangement is configured as a power supply unit for supplying electric energy to the functional units. The power supply unit feeds the electric energy needed by the electric functional units into the bus arrangement and generates preferably its own status and/or error messages.

[0028] An electric functional unit is configured as a locking device for locking the wing and has an electromechanical locking element. The locking device

preferably generates its own error and/or acknowledgement messages.

[0029] An electric functional unit is configured as an emergency power supply unit for supplying electric energy to the electric functional units when there is a system failure and has an electric energy storage, preferably an accumulator. The emergency power supply unit preferably generates its own status and/or error messages.

[0030] The automatic door or window system has different electric functional units, which can be optionally selected and combined. Their arrangement and electric connection takes place in a simple manner by attaching the electric functional units to the bus arrangement.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] The invention will now be explained in more detail with reference to the drawings, wherein:

[0032] Figure 1 shows a front view of an automatic door or window system with two driven sliding wing wings,

[0033] Figure 2 shows a front view of the automatic door or window system with the cover hood removed,

[0034] Figure 3 shows a section along line A-A in Figure 1, and

[0035] Figure 4 shows a detail representation in the area of the bus arrangement in Figure 3.

DETAILED DESCRIPTION OF THE DRAWINGS

[0036] The automatic door or window system shown in Figure 1 has a sliding door drive 2 and two sliding wings 1, which are displaceably guided in an upper horizontal slide track into the sliding door drive 2. On both sides of the door opening is fixedly arranged a fixed field wing 1a. Fanlight wings 1b are arranged over the wings 1a, 1, and over the door guide. All the wings are configured as glass wings, which have a light metal frame, or also as frameless wings. The automatic door or window system is arranged on a pillar-bar construction. The sliding door drive 2 is supported on a horizontal bar above the displaceable sliding wing 1, it is supported via a vertical pillar. The fixed field wings 1a are also attached to different vertical pillars.

[0037] In Figure 2, the automatic door or window system with sliding door drive 2 and two driven sliding wings 1 is shown. The two sliding wings 1 are, as described in Figure 1, displaceably guided in an upper horizontal slide track into the sliding door drive. On both sides of the sliding wing 1 a

fixed field wing 1a is arranged. The automatic door or window system is arranged in the interior of a building on a wall opening. The sliding door drive is supported by the horizontal carrier or directly by the wall above the displaceable sliding wing 1.

[0038] To clarify the arrangement of the components, the sliding door drive 2 in Figure 2 is shown without the cover hood. The housing 7 of the sliding door drive 2 has a bus arrangement 4, which extends in the horizontal direction over the entire length of the housing 7. Parallel to the bus arrangement 4, a mechanical attachment fixture 6 is arranged in the housing 7. The attachment fixture 6 has an attachment groove which runs parallel above and below the bus arrangement 4. The attachment fixture 6 is configured for holding electric functional components. The electric functional components can be releasably fixed to the attachment grooves via suitable attachment means, for example, screws and/or clamps and/or clips.

[0039] On the building wall, in the area of the sliding door drive 2, is arranged an operating arrangement 36. The operating arrangement 36 is connected via a cable 4a to a bus arrangement 4. The operating arrangement 36 can be arranged above in its own housing or below, for example, in a low box. The lines of the bus arrangement 4 are guided directly over

the cable 4a to the external operating arrangement 36, and the operating arrangement 36 is configured on the bus arrangement for direct connection.

[0040] The operating arrangement 36 has input and display elements, for example, a controller or display, and is configured for adjusting and/or programming electric functional units and/or for displaying status messages and/or operational conditions.

[0041] In a modified embodiment, according to Figure 2, however, the connection of the operating arrangement 36 to the bus arrangement 4 can be provided via an electric functional unit carried out as an intelligent terminal field. The intelligent terminal field is connected, on the one hand, to the bus arrangement 4 and has, on the other hand, several electric inputs and outputs for connecting the conventional electric components such as, for example, switches, sensors, and LEDs. The intelligent terminal field is configured so as to be connected to the bus arrangement 4 by electric components without their own intelligence. The intelligent terminal field in the housing 7 can be arranged as an electric functional unit on the bus arrangement 4, or can be arranged under the housing 7, for example, in a box to be mounted below.

[0042] On the bus arrangement 4 is arranged the drive unit 31 as well as other electric functional units. The electric functional units can be arranged on the bus arrangement 4 in an optionally axial position. The drive unit 31 has, aside from the drive motor, an intelligent electric control unit with a microprocessor, which is configured as a bus master. The bus master controls the data communication of the bus arrangement 4. The electric control unit can be configured for automatically recognizing and/or addressing and/or initializing electric functional units. After installing an electric functional unit, the same is automatically recognized and/or initialized and/or addressed by the electric control unit. Also a failure or removal of an electric functional unit is automatically recognized by the electric control unit, and a corresponding status message is generated and/or a corresponding preselectable action, for example, an emergency opening, is initiated.

[0043] In Figure 2, a power supply unit 35 and an emergency power supply unit 34 are arranged as electric functional unit on the bus arrangement 4. The power supply unit 35 feeds into the electric energy for the functional units in the bus arrangement. In the case of an error, for example, a system failure, overheating, or overload, the power supply unit 35 generates corresponding status messages and feeds these also into the bus arrangement 4. The emergency power supply unit 34

has an accumulator which feeds, in the case of a system failure, the electric energy for the functional units into the bus arrangement 4. The emergency power supply unit 34 can be configured so that, because of the system failure generated by the power supply unit 35, it automatically takes over the electric energy supply. In another embodiment, the control unit of the drive unit can be configured for controlling the emergency power supply unit 34.

[0044] Furthermore, in Figure 2, a locking device 33 is arranged on the bus arrangement 4. The locking device 33 has an electromechanical locking element for locking the sliding wing 1. The locking device 33 also has the locking activation and a locking monitoring. The control unit of the drive unit is configured for controlling the locking device 33. The locking device is configured so as to react to the locking and unlocking commands in that the locking device is locked or unlocked and a corresponding acknowledgment message is generated. In the case of an error, for example, the lock is jammed, the locking device 33 transmits the corresponding error message.

[0045] In Figure 2, a sensor device 32 is arranged on the bus arrangement 4. The sensor device 32 has one or several sensor(s) such as, for example, motion detectors, photoelectric barriers, photoelectric sensors. The sensor

device is configured for the monitoring of the function of the connected sensors and/or for activating the control unit of the drive unit. In another embodiment, also several sensor devices can be connected to the bus arrangement.

[0046] The gateway is provided as a further functional unit, which is not shown in Figure 2, and which is configured for connecting the bus arrangement 4 to ancillary guiding equipment, for example, to a building control system.

[0047] In Figure 3, a horizontal section is shown along line A-A of Figure 1. The housing 7 of the sliding door drive 2 has a fixed mounted carrier element 71, a slide track profile 72 attached thereto, and a cover hood 77, wherein the axial length of the carrier element 71 and the slide track profile 72 as well as that of the cover hood is identical. The housing extends in a horizontal direction above the wing 1, 1a and is supported by the carrier element 71 arranged between the slide track profile 72 and a structural carrier 9, preferably a carrier profile 71 supported by the structural horizontal carrier 9. The carrier element 71 is screwed via attachment screws 71b onto the structural horizontal carrier 9. In a modified embodiment, according to Figure 3, the attachment of the carrier element or the slide track profile is also provided directly on a housing wall. To mount the slide track profile 72, the carrier element 71 has a

suspending fixture 71a. The mounting of the slide track profile 72 on the carrier profile takes place via suspending and bracing to the clamping arrangement 71a arranged on the mutually facing front sides of the profiles. The cover hood 7 is attached to the slide track profile 72 in the same way, so that the carrier profile 71, the slide track profile 72, and the cover hood form a composed cube-shaped body with aligned outer sides.

[0048] The slide track profile 72 has on its inner side the slide track 72a. The slide track 72a guides the reel cars 73 in that they are arranged to be axially displaceable on the slide track 72a. The reel cars have cam rollers 73a which coact with the slide track. The cam rollers 73a run on the fixed slide track 72a, which has two mutually facing sliding surfaces in a horizontal plane. The sliding surfaces are formed on the mutually facing sides of the slide track profile 72 and bent into a convex shape. They can, however, also be configured as concave or also slanted planar surfaces.

[0049] Several cam rollers are preferably arranged one behind the other in the sliding direction, which roll along the mutually facing sliding surfaces, that is, that the first cam rollers slide on one sliding surface, and the other cam rollers slide on the other sliding surface.

[0050] The sliding wing 1 is adjustably supported on the reel car 73 by means of a suspending and adjusting device 74. The sliding wing 1 is arranged aligned under the reel car 73 and engages with its horizontal upper edge in dependence upon the adjustment of the suspending and adjusting device 74 more or less deeply into the slide track profile 72.

[0051] Connecting to the front side of the slide track profile 72 is arranged a holding space, which is covered by the cover plate 77 suspended in the slide track profile 72. In the holding space are arranged the drive unit 31 and the functional units 3; they are the components 32, 33, 34, 35, shown in Figure 2. They are attached via an attachment groove 6 with attachment screws to the front side of the profile 72. They are electrically connected to the bus arrangement 4 arranged on the front side of the profile 72. The electric connection on the bus arrangement is shown in detail in Figure 4. Furthermore, the components 3 have a clamping arrangement 5 on their side which faces the front side of the profile 72, with which they are attached in the area of the bus arrangement 4 via a clamping arrangement.

[0052] In a horizontal plane of the holding space is arranged a conventional belt drive arrangement 76, which has a catch 75 guided by deflection rollers which are not shown. The catch 75 engages under the sideways slide track profile leg

into the sliding wing plane and is attached, on the one hand, to the suspending and adjusting device 74 and, on the other hand, to a circulating thrum] of the drive belt arrangement 76. In the holding space, on the side wall of the slide track profile 72, above the drive belt plane, that is, on the front, are arranged the bus arrangement 4 and the mechanical attachment fixture 6. In a modified embodiment, according to Figure 3, the bus arrangement 4 and/or the mechanical attachment fixture 6 can be arranged in another area inside the housing 7, for example, on a horizontal carrier profile, which is arranged in the holding space in the area of the upper horizontal leg of the cover hood 77, or forms the same.

[0053] In the holding space are arranged the electric functional units 3 as well as the drive units 31 on the bus arrangement 4 and/or on the mechanic attachment fixture 6. The mechanic attachment fixture 6 has two grooves 61 which run parallel to the bus arrangement 4, wherein in the grooves 61 are supported displaceable groove pads 62. The electric functional units 3 have, as shown in Figure 3, screws 63 which engage into the groove stones 62 for a releasable and adjustable attachment.

[0054] Figure 4 is an enlargement of the section of the clamping arrangement 5 and the electric bus arrangement 4 of Figure 3. The bus arrangement 4 has a mounting rail arranged

on the slide track profile 72 with two parallel axially running L profiles 45 and conductors and/or ribbon cables arranged between the latter. The two vertical legs of the L profiles are arranged parallel to the slide track profile 72 and face in mutually opposite directions. The horizontal leg of the L profiles 45 delimits on both sides a holding groove 41 having a rectangular cross section, which is configured for accommodating electric bus bars and/or ribbon cables. The electric bus bars form the bus lines and are configured in the rectangular holding groove 41 as two electrically conducting tracks 43a, b with the same cross section form arranged parallel and at a distance from each other. The remaining space of the holding groove 41 is filled with an elastic rubber-like isolation material 42. In a modified embodiment, also a ribbon cable can be arranged in the holding groove 41, wherein its cable conductors are configured as bus lines.

[0055] The clamping arrangement 5 is arranged between the electric functional unit 3 and the bus arrangement 4. The clamping arrangement 5 has a plastic clamp 51 which is attached to the electric functional unit, which has two clamps 52a, b which grip onto the two vertical L legs 45 of the bus arrangement 4. The clamp 51 is configured as a releasable clip connection, while the clamp 51 is made of an elastic material, for example, a plastic. The clamping arrangement 5 also has two electrically conducting contacting domes 44a, b arranged

across from the bus bars 43a, b, which are in electric connection with the electric functional units. The contacting domes are configured so that they cut through the isolation material 42 when the clamping arrangement 5 is attached to the bus arrangement 4 and come into electrically conducting contact with the electric bus bars 43a, b and produce the electric connection of the functional unit 3 to the bus arrangement.

[0056] When removing the clamping arrangement 5 from the bus arrangement 4, the contacting domes 44a, b leave behind holes in the isolation material 42. To reestablish the isolation, the isolation material is configured so as to be elastic to provide an automatic closure of the holes.

[0057] As shown in Figure 4, the two bus bars 43a, b and the complementing contacting domes 44a, b of the clamp 51 are arranged asymmetrically to exclude an inversion of the polarity by a twisting of the clamp 51 by 180°. In another embodiment, the clamp 51 can also be configured asymmetrically, for example, it can have a groove on one side which coacts with an L profile, which prevents a twisting of the clamp. The two bus bars are configured as two-wire buses, for example, a CE bus or LON powerline. The power supply of the electric functional units and the data and signal transmission take place via the same lines 43a, b.

[0058] In a modified embodiment of Figure 4, it can be provided to configure the profile housing 7 as a part of the bus arrangement, for example, a mass line and/or screening, wherein a two-wire bus in the holding groove 41 has only one conductor. It is also possible to configure the bus arrangement 4 as a three-wire bus, for example, a CAN bus or ASI bus, or as a multiwire bus. Hereby, the transmission of the electric energy and the data and signal transmission take place via separate lines.

[0059] In a modified embodiment of Figure 4 it can be provided that the clamp 51 is not attached directly to the electric functional unit 3, but is connected to the same via a cable.

Attorney Docket No. 1318/49872
PCT Application No. PCT/EP 00/08619
Marked-up Copy of Substitute Specification

AUTOMATIC DOOR OR WINDOW SYSTEM

BACKGROUND AND SUMMARY OF THE INVENTION

The invention concerns an automatic door or window system with [the features of the preamble of claim 1.] a drive, preferably a sliding door drive, and with a displaceable driven wing, preferably a sliding wing or folding wing, wherein the drive has the following components: a fixedly mounted slide track, wherein the wing is preferably displaced in the slide track guided by cam rollers of at least one reel car, an electric drive unit for driving the wing arranged on a fixedly mounted carrier, preferably on the slide track, or on a part connected therewith, having an electric drive motor, as well as several electric functional units, for example, power supply units and/or locking devices and/or emergency power supply units, arranged on a fixedly mounted carrier, preferably on a slide track or on a part connected to the slide track.

An automatic door or window system such as this is known from German patent publication DE 298 19 342. It is an automatic sliding door system. The drive motor, the electric control, and other electric components such as the locking and control sensors in this known system are mounted on the fixedly mounted slide track of the sliding wing. The electric components are electrically connected with each other via a cable connection.

When producing and assembling the drive, this has as a consequence a relatively high effort for producing the electric connection. The cable connection also requires a large construction space.

In other differently built known automatic door systems such as, for example, those described in European patent publication EP 0 597 208 A1, a sliding wing system driven by an electric motor is known. The sliding wings are guided partition wall elements that can be displaced in a slide track via a reel car. The drive motors are mounted on the reel car. The outgoing shaft of the drive motor is operationally coupled to a shaft of the cam roller via a belt drive and a planetary drive. The power supply of the wing-fixed drive motors takes place via current collectors that measured up a bus bar arranged on the ceiling in the interior of the slide track profile. Aside from the drive motors, no other electric components are provided on or in the movable wing in this arrangement so that the bus bar serves merely for the transmission of energy to the drive motors.

From the international patent publication WO 99/04 122 is known another automatic sliding door system. On the wings and on the slide track are arranged electric components. Especially the drive motor is fixedly arranged on the wing or the reel car and the control unit is fixedly arranged on the slide track. A bus bar is provided for supplying the power and signal transmission

from the fixed electric control to the movable drive motor. The current collection of the motor takes place via collecting contacts or via the cam rollers of the reel car. In each case, the bus bar is arranged in the slide track so that the connection of other electric components to the bus bar can only be realized with difficulty. The supplementary connection of other electric components is not provided.

The object of the invention is to provide an automatic door or window system which is more simply built and more universally utilizable.

This object is attained, according to the invention, via [the object of claim 1.] a bus arrangement, which is configured for data or signal transmission between the electric functional units or between the electric functional units and the drive unit, and wherein the slide track or a part connected to the slide track, which include a housing of the drive, has a groove for holding the bus arrangement.

The automatic door or window system can be arranged on a fixed mountable carrier. It has a slide track for a displaceable guided wing, preferably a sliding wing or folding wing. On the slide track are arranged a fixedly mountable electric drive unit as well as other fixedly mountable electric functional units such

as, for example, power supply units and/or locking devices and/or emergency power supply units.

A bus arrangement is provided for the transmission data and/or signal transmission. The data and/or signal transmission can take place between the electric functional units themselves or also between the electric functional units and the electric drive unit. The electric functional units can also be rearranged and/or removed later and/or additional electric functional units can be attached to the bus unit. Supplementary expansions or repairs can be carried out with ease. The drive unit and/or at least one functional unit can have its own intelligence, preferably a microprocessor. The possibility for the bus unit to have different bus protocols for data and/or signal transmission is created via the intelligent components. The functional units can be configured, for example, as a power supply unit and/or an emergency power unit and/or a locking device and/or a sensor device. The drive unit can have the following components: an electric drive motor and/or a control unit, preferably with a microprocessor, for controlling the drive motor and/or a monitoring device for monitoring the function of the control unit and/or the drive unit and/or the bus arrangement. Aside from the data and/or signal transmission, the power supply can also take place via the bus arrangement.

In a particularly advantageous embodiment, the drive unit, preferably the control unit with microprocessor, is configured to automatically recognize and/or address and/or initialize and/or program the connected functional units. When connecting a new functional unit to the bus arrangement, the drive unit can automatically recognize and/or program and/or set the parameters of the new functional unit. The functional unit can have a response unit, which can be configured with or without its own intelligence and which can coact with the drive unit via the bus arrangement. The drive unit can also be configured so that the already existing functional units can be reprogrammed and/or newly initialized in accordance with the new functional unit. The installation effort is reduced considerably since with a modification or expansion of the automatic door or window system the adaptation of the functional units and/or the drive units can largely take place automatically. Of course, there is the possibility of conventional manual undertaking or inputting other adaptations and/or programs and/or parameters via a service terminal connected to a bus arrangement.

The bus arrangement advantageously extends over a large part of the width of the slide track. The bus arrangement can also extend in an axial direction over the entire width of the slide track. In this way, it is possible to arrange the electric functional units and/or drive units in any desired axial position in the housing.

The bus arrangement can have a ribbon cable with rectangular cross section and parallel conductors for data and/or signal transmission. In this way, the individual conductors of the ribbon cable can be configured as bus lines. A groove, which is configured as a carrier for the bus arrangement on the profile housing, is advantageously provided. The ribbon cable can be held in the groove, or either one or several parallel conductors can be arranged isolated from each other.

The connection of the electric function units to the bus arrangement takes place advantageously in a cutting/clamping technique. For this purpose, the electric functional units can have a clamping arrangement. The clamping arrangement can be configured so as to be suspended and/or screwed and/or clipped and has more or less electrically conducting contacting domes, in correspondence to the number and arrangement of the conductors of the bus arrangement. The contacting domes are configured so that, when the clamping arrangement is attached, they cut through the isolation at the bus arrangement and come into electric contact with a conductor of the bus arrangement.

The isolation is advantageously made of an elastic rubber-like material so that, after the removal of one electric functional unit, the remaining contact holes are again closed off by the elastic isolation.

In another embodiment, the electric connection to the bus arrangement can also take place with loop contacts. The conductors then have no or one displaceable isolating cover to make possible the direct electric contact between the loop contacts and the conductors.

In a particularly advantageous embodiment, the arrangement of the conductors and the complementary arrangement of the contacts to the clamping arrangement can be configured so as to be asymmetrical to exclude a false or polarity-reversed electric connection. It can also be provided to configure the clamping arrangement so as to be asymmetrical, for example, to a pin which engages into a groove of the bus arrangement which is configured on one side of the clamping arrangement.

The bus arrangement can also have a mechanical attachment fixture, for example, a releasable clip connection and/or screw connection for mechanically fixing the electric functional units. The clamping arrangement configured for the electric connection is advantageously also a mechanical attachment fitting for the simultaneous mechanical fixing in that, for example, the clamping arrangement has a releasable clip connection and/or screw connection coacting with the bus arrangement.

The bus arrangement can be configured as a two-wire bus or multi-wire bus. In the configuration as a three-wire or multiwire bus, the power supply and the data and signal transmission take place via different electric lines. Suitable bus systems are, for example, a CAN bus or ASI bus. In the advantageous configuration such as a two-wire bus, the power supply and the data and signal transmission take place via the same lines. Suitable bus systems are, for example, a CE bus or a LON powerline. It can also be conceived to configure the housing of the drive or the slide track to be electrically conducting, for example, as a mass line of the bus arrangement. The housing can then have a part of the bus arrangement, especially a bus line and/or a screening. In the two-wire bus, aside from the housing, only one more conductor must then be provided.

Several sliding door drives can also be coupled, preferably electrically connected via the bus arrangement.

The data and signal transmission to the bus arrangement can be configured coded. In this way, a high interference immunity is obtained with respect to the conventional wiring. Via the use of corresponding error-redundant codes, the interference immunity can be further increased.

The electric functional units can be configured with or without their own intelligence, for example, a microprocessor.

In a preferred embodiment, each electric functional unit has its own intelligence. The electric functional units, to increase the operational safety, preferably have their own monitoring unit so as to, for example, detect and report functional malfunctions and/or system disturbances.

The electric drive unit has a drive motor and a control and/or regulation device that coacts with the motor. The drive unit is preferably configured as a bus master. The drive unit can control the data and signal transmission, as well as also carry out safety and initialization functions. In this way, the electric drive unit can be configured for automatically recognizing and/or addressing and/or setting the parameters of the electric functional units, which are connected to the bus arrangement.

An electric functional unit can be configured as a redundant safety device. The safety device is configured for the monitoring of the control and/or regulation devices and can take over the function of the control and/or regulation devices when these fail. In this way, the function of the automatic door or window system is ensured, especially an emergency opening of escape or emergency exit doors also when the control and/or regulation device have failed.

Via an electric functional unit configured as a gateway, the bus arrangement can be connected to a guiding system, preferably a building control system.

Via an electric functional unit configured as an intelligent terminal field, conventionally wired components such as, for example, a key switch and/or emergency unlocking switch and/or control switch can be connected to the bus arrangement. An embodiment of the intelligent terminal field can also be conceivable, which is arranged outside of the profile housing, for example, behind an assigned switching element in a box mounted underneath.

An electric functional unit can be configured as a sensor device, preferably with a motion detector and/or photoelectric sensor and/or photoelectric barrier. In a preferred embodiment, the sensor device is configured so as to be programmable and/or adjustable via the bus arrangement. The sensitivity and/or the directional characteristic can be especially configured so as to be programmable and/or adjustable.

Furthermore, an operating arrangement can be provided, which is connected to the bus arrangement. The operating arrangement can have an input element, preferably a controller, and a display element, preferably a display. The operating arrangement can be configured for setting the mode of operation, and/or for setting

the door parameters, and/or for displaying and storing status messages and/or service data. The operating arrangement can also be configured for programming the electric functional units, for example, a sensor device.

An electric functional arrangement is configured as a power supply unit for supplying electric energy to the functional units. The power supply unit feeds the electric energy needed by the electric functional units into the bus arrangement and generates preferably its own status and/or error messages.

An electric functional unit is configured as a locking device for locking the wing and has an [electromechanic] electromechanical locking element. The locking device preferably generates its own error and/or acknowledgement messages.

An electric functional unit is configured as an emergency power supply unit for supplying electric energy to the electric functional units when there is a system failure and has an electric energy storage, preferably an accumulator. The emergency power supply unit preferably generates its own status and/or error messages.

The automatic door or window system has different electric functional units, which can be optionally selected and combined. Their arrangement and electric connection takes place in a simple

manner by attaching the electric functional units to the bus arrangement.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be explained in more detail with reference to the drawings, wherein:

Figure 1 shows a front view of an automatic door or window system with two driven sliding wing wings,

Figure 2 shows a front view of the automatic door or window system with the cover hood removed,

Figure 3 shows a section along line A-A in Figure 1, and

Figure 4 shows a detail representation in the area of the bus arrangement in Figure 3.

DETAILED DESCRIPTION OF THE DRAWINGS

The automatic door or window system shown in Figure 1 has a sliding door drive 2 and two sliding wings 1, which are displaceably guided in an upper horizontal slide track into the sliding door drive 2. On both sides of the door opening is fixedly arranged a fixed field wing 1a. Fanlight wings 1b are arranged over the wings 1a, 1, and over the door guide. All the wings are configured as glass wings, which have a light metal

frame, or also as frameless wings. The automatic door or window system is arranged on a pillar-bar construction. The sliding door drive 2 is supported on a horizontal bar above the displaceable sliding wing 1, it is supported via a vertical pillar. The fixed field wings 1a are also attached to different vertical pillars.

In Figure 2, the automatic door or window system with sliding door drive 2 and two driven sliding wings 1 is shown. The two sliding wings 1 are, as described in Figure 1, displaceably guided in an upper horizontal slide track into the sliding door drive. On both sides of the sliding wing 1 a fixed field wing 1a is arranged. The automatic door or window system is arranged in the interior of a building on a wall opening. The sliding door drive is supported by the horizontal carrier or directly by the wall above the displaceable sliding wing 1.

To clarify the arrangement of the components, the sliding door drive 2 in Figure 2 is shown without the cover hood. The housing 7 of the sliding door drive 2 has a bus arrangement 4, which extends in the horizontal direction over the entire length of the housing 7. Parallel to the bus arrangement 4, a mechanical attachment fixture 6 is arranged in the housing 7. The attachment fixture 6 has an attachment groove which runs parallel above and below the bus arrangement 4. The attachment fixture 6 is configured for holding electric functional components. The electric functional components can be releasably fixed to the

attachment grooves via suitable attachment means, for example, screws and/or clamps and/or clips.

On the building wall, in the area of the sliding door drive 2, is arranged an operating arrangement 36. The operating arrangement 36 is connected via a cable 4a to a bus arrangement 4. The operating arrangement 36 can be arranged above in its own housing or below, for example, in a low box. The lines of the bus arrangement 4 [is guide] <u>are guided</u> directly over the cable 4a to the external operating arrangement 36, and the operating arrangement 36 is configured on the bus arrangement for direct connection.

The operating arrangement 36 has input and display elements, for example, a controller or display, and is configured for adjusting and/or programming electric functional units and/or for displaying status messages and/or operational conditions.

In a modified embodiment, according to Figure 2, however, the connection of the operating arrangement 36 to the bus arrangement 4 can be provided via an electric functional unit carried out as an intelligent terminal field. The intelligent terminal field is connected, on the one hand, to the bus arrangement 4 and has, on the other hand, several electric inputs and outputs for connecting the conventional electric components such as, for example, switches, sensors, and LEDs. The

intelligent terminal field is configured so as to be connected to the bus arrangement 4 by electric components without their own intelligence. The intelligent terminal field in the housing 7 can be arranged as an electric functional unit on the bus arrangement 4, or can be arranged under the housing 7, for example, in a box to be mounted below.

On the bus arrangement 4 is arranged the drive unit 31 as well as other electric functional units. The electric functional units can be arranged on the bus arrangement 4 in an optionally axial position. The drive unit 31 has, aside from the drive motor, an intelligent electric control unit with a microprocessor, which is configured as a bus master. The bus master controls the data communication of the bus arrangement 4. The electric control unit can be configured for automatically recognizing and/or addressing and/or initializing electric functional units. After installing an electric functional unit, the same is automatically recognized and/or initialized and/or addressed by the electric control unit. Also a failure or removal of an electric functional unit is automatically recognized by the electric control unit, and a corresponding status message is generated and/or a corresponding preselectable action, for example, an emergency opening, is initiated.

In Figure 2, a power supply unit 35 and an emergency power supply unit 34 are arranged as electric functional unit on the

bus arrangement 4. The power supply unit 35 feeds into the electric energy for the functional units in the bus arrangement. In the case of an error, for example, a system failure, overheating, or overload, the power supply unit 35 generates corresponding status messages and feeds these also into the bus arrangement 4. The emergency power supply unit 34 has an accumulator which feeds, in the case of a system failure, the electric energy for the functional units into the bus arrangement 4. The emergency power supply unit 34 can be configured so that, because of the system failure generated by the power supply unit 35, it automatically takes over the electric energy supply. In another embodiment, the control unit of the drive unit can be configured for controlling the emergency power supply unit 34.

Furthermore, in Figure 2, a locking device 33 is arranged on the bus arrangement 4. The locking device 33 has an [electromechanic] electromechanical locking element for locking the sliding wing 1. The locking device 33 also has the locking activation and a locking monitoring. The control unit of the drive unit is configured for controlling the locking device 33. The locking device is configured so as to react to the [commands] locking and unlocking commands in that the locking device is locked or unlocked and a corresponding acknowledgment message is generated. In the case of an error, for example, the lock is jammed, the locking device 33 transmits the corresponding error message.

In Figure 2, a sensor device 32 is arranged on the bus arrangement 4. The sensor device 32 has one or several sensor(s) such as, for example, motion detectors, photoelectric barriers, photoelectric sensors. The sensor device is configured for the monitoring of the function of the connected sensors and/or for activating the control unit of the drive unit. In another embodiment, also several sensor devices can be connected to the bus arrangement.

The gateway is provided as a further functional unit, which is not shown in Figure 2, and which is configured for connecting the bus arrangement 4 to [an] ancillary guiding equipment, for example, to a building control system.

In Figure 3, a horizontal section is shown along line A-A of Figure 1. The housing 7 of the sliding door drive 2 has a fixed mounted carrier element 71, a slide track profile 72 attached thereto, and a cover hood 77, wherein the axial length of the carrier element 71 and the slide track profile 72 as well as that of the cover hood is identical. The housing extends in a horizontal direction above the wing 1, 1a and is supported by the carrier element 71 arranged between the slide track profile 72 and a structural carrier 9, preferably a carrier profile 71 supported by the structural horizontal carrier 9. The carrier element 71 is screwed via attachment screws 71b onto the

structural horizontal carrier 9. In a modified embodiment, according to Figure 3, the attachment of the carrier element or the slide track profile is also provided directly on a housing wall. To mount the slide track profile 72, the carrier element 71 has a suspending fixture 71a. The mounting of the slide track profile 72 on the carrier profile takes place via suspending and bracing to the clamping arrangement 71a arranged on the mutually facing front sides of the profiles. The cover hood 7 is attached to the slide track profile 72 in the same way, so that the carrier profile 71, the slide track profile 72, and the cover hood form a composed cube-shaped body with aligned outer sides.

The slide track profile 72 has on its inner side the slide track 72a. The slide track 72a guides the reel cars [72] 73 in that they are arranged to be axially displaceable on the slide track 72a. The reel cars have cam rollers 73a which coact with the slide track. The cam rollers 73a run on the fixed slide track 72a, which has two mutually facing sliding surfaces in a horizontal plane. The sliding surfaces are formed on the mutually facing sides of the slide track profile 72 and bent into a convex shape. They can, however, also be configured as concave or also slanted planar surfaces.

Several cam rollers are preferably arranged one behind the other in the sliding direction, which roll [off on] along the mutually facing sliding surfaces, that is, that the first cam

rollers slide on one sliding surface, and the other cam rollers slide on the other sliding surface.

The sliding wing 1 is adjustably supported on the reel car 73 by means of a suspending and adjusting device 74. The sliding wing 1 is arranged aligned under the reel car 73 and engages with its horizontal upper edge in dependence upon the adjustment of the suspending and adjusting device 74 more or less deeply into the slide track profile 72.

Connecting to the front side of the slide track profile 72 is arranged a holding space, which is covered by the cover plate 77 suspended in the slide track profile 72. In the holding space are arranged the drive unit 31 and the functional units 3; they are the components 32, 33, 34, 35, shown in Figure 2. They are attached via an attachment groove 6 with attachment screws to the front side of the profile 72. They are electrically connected to the bus arrangement 4 arranged on the front side of the profile 72. The electric connection on the bus arrangement is shown in detail in Figure 4. Furthermore, the components 3 have a clamping arrangement 5 on their side which faces the front side of the profile 72, with which they are attached in the area of the bus arrangement 4 via a clamping arrangement.

In a horizontal plane of the holding space is arranged a conventional belt drive arrangement 76, which has a catch 75

guided by deflection rollers which are not shown. The catch 75 engages under the sideways slide track profile leg into the sliding wing plane and is attached, on the one hand, to the suspending and adjusting device 74 and, on the other hand, to a circulating thrum [[trum - term not listed in dictionaries, ed.]] of the drive belt arrangement 76. In the holding space, on the side wall of the slide track profile 72, above the drive belt plane, that is, on the front, are arranged the bus arrangement 4 and the mechanical attachment fixture 6. In a modified embodiment, according to Figure 3, the bus arrangement 4 and/or the mechanical attachment fixture 6 can be arranged in another area inside the housing 7, for example, on a horizontal carrier profile, which is arranged in the holding space in the area of the upper horizontal leg of the cover hood 77, or forms the same.

In the holding space are arranged the electric functional units 3 as well as the drive units 31 on the bus arrangement 4 and/or on the mechanic attachment fixture 6. The mechanic attachment fixture 6 has two grooves 61 which run parallel to the bus arrangement 4, wherein in the grooves 61 are supported displaceable groove pads 62. The electric functional units 3 have, as shown in Figure 3, screws 63 which engage into the groove stones 62 for a releasable and adjustable attachment.

Figure 4 is an enlargement of the section of the clamping arrangement 5 and the electric bus arrangement 4 of Figure 3. The

bus arrangement 4 has a mounting rail arranged on the slide track profile 72 with two parallel axially running L profiles 45 and conductors and/or ribbon cables arranged between the latter. The two vertical legs of the L profiles are arranged parallel to the slide track profile 72 and face in mutually opposite directions. The horizontal leg of the L profiles 45 delimits on both sides a holding groove 41 having a rectangular cross section, which is configured for accommodating electric bus bars and/or ribbon cables. The electric bus bars form the bus lines and are configured in the rectangular holding groove 41 as two electrically conducting tracks 43a, b with the same cross section form arranged parallel and at a distance from each other. The remaining space of the holding groove 41 is filled with an elastic rubber-like isolation material 42. In a modified embodiment, also a ribbon cable can be arranged in the holding groove 41, wherein its cable conductors are configured as bus lines.

The clamping arrangement 5 is arranged between the electric functional unit 3 and the bus arrangement 4. The clamping arrangement 5 has a plastic clamp 51 which is attached to the electric functional unit, which has two clamps 52a, b which grip onto the two vertical L legs 45 of the bus arrangement 4. The clamp 51 is configured as a releasable clip connection, while the clamp 51 is made of an elastic material, for example, a plastic. The clamping arrangement 5 also has two electrically conducting

contacting domes 44a, b arranged across from the bus bars 43a, b, which are in electric connection with the electric functional units. The contacting domes are configured so that they cut through the isolation material 42 when the clamping arrangement 5 is attached to the bus arrangement 4 and come into electrically conducting contact with the electric bus bars 43a, b and produce the electric connection of the functional unit 3 to the bus arrangement.

When removing the clamping arrangement 5 from the bus arrangement 4, the contacting domes 44a, b leave behind holes in the isolation material 42. To reestablish the isolation, the isolation material is configured so as to be elastic to provide an automatic closure of the holes.

As shown in Figure 4, the two bus bars 43a, b and the complementing contacting domes 44a, b of the clamp 51 are arranged asymmetrically to exclude an inversion of the polarity by a twisting of the clamp 51 by 180°. In another embodiment, the clamp 51 can also be configured asymmetrically, for example, it can have a groove on one side which coacts with an L profile, which prevents a twisting of the clamp. The two bus bars are configured as two-wire buses, for example, a CE bus or LON powerline. The power supply of the electric functional units and the data and signal transmission take place via the same lines 43a, b.

In a modified embodiment of Figure 4, it can be provided to configure the profile housing 7 as a part of the bus arrangement, for example, a mass line and/or screening, wherein a two-wire bus in the holding groove 41 has only one conductor. It is also possible to configure the bus arrangement 4 as a three-wire bus, for example, a CAN bus or ASI bus, or as a multiwire bus. Hereby, the transmission of the electric energy and the data and signal transmission take place via separate lines.

In a modified embodiment of Figure 4 it can be provided that the clamp 51 is not attached directly to the electric functional unit 3, but is connected to the same via a cable.

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Automatic Door or Window System

The invention concerns an automatic door or window system with the features of the preamble of claim 1.

An automatic door or window system such as this is known from German patent publication DE 298 19 342. It is an automatic sliding door system. The drive motor, the electric control, and other electric components such as the locking and control sensors in this known system are mounted on the fixedly mounted slide track of the sliding wing. The electric components are electrically connected with each other via a cable connection. When producing and assembling the drive, this has as a consequence a relatively high effort for producing the electric connection. The cable connection also requires a large construction space.

In other differently built known automatic door systems such as, for example, those described in European patent publication EP 0 597 208 A1, a sliding wing system driven by an electric motor is known. The sliding wings are guided partition wall elements that can be displaced in a slide track via a reel car. The drive motors are mounted on the reel car. The outgoing shaft of the drive motor is operationally coupled to a shaft of the cam roller via a belt drive and a planetary drive. The power supply of the wing-fixed drive motors takes place via current

collectors that measured up a bus bar arranged on the ceiling in the interior of the slide track profile. Aside from the drive motors, no other electric components are provided on or in the movable wing in this arrangement so that the bus bar serves merely for the transmission of energy to the drive motors.

From the international patent publication WO 99/04 122 is known another automatic sliding door system. On the wings and on the slide track are arranged electric components. Especially the drive motor is fixedly arranged on the wing or the reel car and the control unit is fixedly arranged on the slide track. A bus bar is provided for supplying the power and signal transmission from the fixed electric control to the movable drive motor. The current collection of the motor takes place via collecting contacts or via the cam rollers of the reel car. In each case, the bus bar is arranged in the slide track so that the connection of other electric components to the bus bar can only be realized with difficulty. The supplementary connection of other electric components is not provided.

The object of the invention is to provide an automatic door or window system which is more simply built and more universally utilizable.

This object is attained, according to the invention, via the object of claim 1.

The automatic door or window system can be arranged on a fixed mountable carrier. It has a slide track for a displaceable guided wing, preferably a sliding wing or folding wing. On the slide track are arranged a fixedly mountable electric drive unit as well as other fixedly mountable electric functional units such as, for example, power supply units and/or locking devices and/or emergency power supply units.

A bus arrangement is provided for the transmission data and/or signal transmission. The data and/or signal transmission can take place between the electric functional units themselves or also between the electric functional units and the electric drive unit. The electric functional units can also be rearranged and/or removed later and/or additional electric functional units can be attached to the bus unit. Supplementary expansions or repairs can be carried out with ease. The drive unit and/or at least one functional unit can have its own intelligence, preferably a microprocessor. The possibility for the bus unit to have different bus protocols for data and/or signal transmission is created via the intelligent components. The functional units can be configured, for example, as a power supply unit and/or an emergency power unit and/or a locking device and/or a sensor device. The drive unit can have the following components: an electric drive motor and/or a control unit, preferably with a microprocessor, for controlling the drive motor and/or a monitoring device for monitoring the function of the control unit and/or the drive unit and/or the bus arrangement. Aside from the data and/or signal transmission, the power supply can also take place via the bus arrangement.

In a particularly advantageous embodiment, the drive unit, preferably the control unit with microprocessor, is configured to automatically recognize and/or address and/or initialize and/or program the connected functional units. When connecting a new functional unit to the bus arrangement, the drive unit can automatically recognize and/or program and/or set the parameters of the new functional unit. The functional unit can have a response unit, which can be configured with or without its own intelligence and which can coact with the drive unit via the bus arrangement. The drive unit can also be configured so that the already existing functional units can be reprogrammed and/or newly initialized in accordance with the new functional unit. The installation

effort is reduced considerably since with a modification or expansion of the automatic door or window system the adaptation of the functional units and/or the drive units can largely take place automatically. Of course, there is the possibility of conventional manual undertaking or inputting other adaptations and/or programs and/or parameters via a service terminal connected to a bus arrangement.

The bus arrangement advantageously extends over a large part of the width of the slide track. The bus arrangement can also extend in axial direction over the entire width of the slide track. In this way, it is possible to arrange the electric functional units and/or drive units in any desired axial position in the housing.

The bus arrangement can have a ribbon cable with rectangular cross section and parallel conductors for data and/or signal transmission. In this way, the individual conductors of the ribbon cable can be configured as bus lines. A groove, which is configured as a carrier for the bus arrangement on the profile housing, is advantageously provided. The ribbon cable can be held in the groove, or either one or several parallel conductors can be arranged isolated from each other.

The connection of the electric function units to the bus arrangement takes place advantageously in a cutting/clamping technique. For this purpose, the electric functional units can have a clamping arrangement. The clamping arrangement can be configured so as to be suspended and/or screwed and/or clipped and has more or less electrically conducting contacting domes, in correspondence to the number and arrangement of the conductors of the bus arrangement. The contacting domes are configured so that, when the clamping arrangement is attached, they cut through the isolation at the bus arrangement and come into electric contact with a conductor of the bus arrangement.

The isolation is advantageously made of an elastic rubber-like material so that, after the removal of one electric functional unit, the remaining contact holes are again closed off by the elastic isolation.

In another embodiment, the electric connection to the bus arrangement can also take place with loop contacts. The conductors then have no or one displaceable isolating cover to make possible the direct electric contact between the loop contacts and the conductors.

In a particularly advantageous embodiment, the arrangement of the conductors and the complementary arrangement of the contacts to the clamping arrangement can be configured so as to be asymmetrical to exclude a false or polarity-reversed electric connection. It can also be provided to configure the clamping arrangement so as to be asymmetrical, for example, to a pin which engages into a groove of the bus arrangement which is configured on one side of the clamping arrangement.

The bus arrangement can also have a mechanical attachment fixture, for example, a releasable clip connection and/or screw connection for mechanically fixing the electric functional units. The clamping arrangement configured for the electric connection is advantageously also a mechanical attachment fitting for the simultaneous mechanical fixing in that, for example, the clamping arrangement has a releasable clip connection and/or screw connection coacting with the bus arrangement.

The bus arrangement can be configured as a two-wire bus or multi-wire bus. In the configuration as a three-wire or multiwire bus, the power supply and the data and signal transmission take place via different electric lines. Suitable bus systems are, for example, a CAN bus or ASI bus. In the advantageous configuration such as a two-wire bus, the power supply and the data and signal transmission take place via the same lines. Suitable bus

systems are, for example, a CE bus or a LON powerline. It can also be conceived to configure the housing of the drive or the slide track to be electrically conducting, for example, as a mass line of the bus arrangement. The housing can then have a part of the bus arrangement, especially a bus line and/or a screening. In the two-wire bus, aside from the housing, only one more conductor must then be provided.

Several sliding door drives can also be coupled, preferably electrically connected via the bus arrangement.

The data and signal transmission to the bus arrangement can be configured coded. In this way, a high interference immunity is obtained with respect to the conventional wiring. Via the use of corresponding error-redundant codes, the interference immunity can be further increased.

The electric functional units can be configured with or without their own intelligence, for example, a microprocessor. In a preferred embodiment, each electric functional unit has its own intelligence. The electric functional units, to increase the operational safety, preferably have their own monitoring unit so as to, for example, detect and report functional malfunctions and/or system disturbances.

The electric drive unit has a drive motor and a control and/or regulation device that coacts with the motor. The drive unit is preferably configured as a bus master. The drive unit can control the data and signal transmission, as well as also carry out safety and initialization functions. In this way, the electric drive unit can be configured for automatically recognizing and/or addressing and/or setting the parameters of the electric functional units, which are connected to the bus arrangement.

An electric functional unit can be configured as a redundant safety device. The safety device is configured for the monitoring of the control and/or regulation devices and can take over the function of the control and/or regulation devices when these fail. In this way, the function of the automatic door or window system is ensured, especially an emergency opening of escape or emergency exit doors also when the control and/or regulation device have failed.

Via an electric functional unit configured as a gateway, the bus arrangement can be connected to a guiding system, preferably a building control system.

Via an electric functional unit configured as an intelligent terminal field, conventionally wired components such as, for example, a key switch and/or emergency unlocking switch and/or control switch can be connected to the bus arrangement. An embodiment of the intelligent terminal field can also be conceivable, which is arranged outside of the profile housing, for example, behind an assigned switching element in a box mounted underneath.

An electric functional unit can be configured as a sensor device, preferably with a motion detector and/or photoelectric sensor and/or photoelectric barrier. In a preferred embodiment, the sensor device is configured so as to be programmable and/or adjustable via the bus arrangement. The sensitivity and/or the directional characteristic can be especially configured so as to be programmable and/or adjustable.

Furthermore, an operating arrangement can be provided, which is connected to the bus arrangement. The operating arrangement can have an input element, preferably a controller, and a display element, preferably a display. The operating arrangement can be configured for setting the mode of operation, and/or for setting the door

parameters, and/or for displaying and storing status messages and/or service data. The operating arrangement can also be configured for programming the electric functional units, for example, a sensor device.

An electric functional arrangement is configured as a power supply unit for supplying electric energy to the functional units. The power supply unit feeds the electric energy needed by the electric functional units into the bus arrangement and generates preferably its own status and/or error messages.

An electric functional unit is configured as a locking device for locking the wing and has an electromechanic locking element. The locking device preferably generates its own error and/or acknowledgement messages.

An electric functional unit is configured as an emergency power supply unit for supplying electric energy to the electric functional units when there is a system failure and has an electric energy storage, preferably an accumulator. The emergency power supply unit preferably generates its own status and/or error messages.

The automatic door or window system has different electric functional units, which can be optionally selected and combined. Their arrangement and electric connection takes place in a simple manner by attaching the electric functional units to the bus arrangement.

The invention will now be explained in more detail with reference to the drawings, wherein:

Figure 1 shows a front view of an automatic door or window system with two driven sliding wing wings,

Figure 2 shows a front view of the automatic door or window system with the cover hood removed,

Figure 3 shows a section along line A-A in Figure 1, and

Figure 4 shows a detail representation in the area of the bus arrangement in Figure 3.

The automatic door or window system shown in Figure 1 has a sliding door drive 2 and two sliding wings 1, which are displaceably guided in an upper horizontal slide track into the sliding door drive 2. On both sides of the door opening is fixedly arranged a fixed field wing 1a. Fanlight wings 1b are arranged over the wings 1a, 1, and over the door guide. All the wings are configured as glass wings, which have a light metal frame, or also as frameless wings. The automatic door or window system is arranged on a pillar-bar construction. The sliding door drive 2 is supported on a horizontal bar above the displaceable sliding wing 1, it is supported via a vertical pillar. The fixed field wings 1a are also attached to different vertical pillars.

In Figure 2, the automatic door or window system with sliding door drive 2 and two driven sliding wings 1 is shown. The two sliding wings 1 are, as described in Figure 1, displaceably guided in an upper horizontal slide track into the sliding door drive. On both sides of the sliding wing 1 a fixed field wing 1a is arranged. The automatic door or window system is arranged in the interior of a building on a wall opening. The sliding door drive is supported by the horizontal carrier or directly by the wall above the displaceable sliding wing 1.

To clarify the arrangement of the components, the sliding door drive 2 in Figure 2 is shown without the cover hood. The housing 7 of the sliding door drive 2 has a bus arrangement 4, which extends in the horizontal direction over the entire length of the housing 7. Parallel to the bus arrangement 4, a mechanical attachment fixture 6 is arranged in the housing 7. The attachment fixture 6 has

an attachment groove which runs parallel above and below the bus arrangement 4. The attachment fixture 6 is configured for holding electric functional components. The electric functional components can be releasably fixed to the attachment grooves via suitable attachment means, for example, screws and/or clamps and/or clips.

On the building wall, in the area of the sliding door drive 2, is arranged an operating arrangement 36. The operating arrangement 36 is connected via a cable 4a to a bus arrangement 4. The operating arrangement 36 can be arranged above in its own housing or below, for example, in a low box. The lines of the bus arrangement 4 is guide directly over the cable 4a to the external operating arrangement 36 and the operating arrangement 36 is configured on the bus arrangement for direct connection.

The operating arrangement 36 has input and display elements, for example, a controller or display, and is configured for adjusting and/or programming electric functional units and/or for displaying status messages and/or operational conditions.

In a modified embodiment, according to Figure 2, however, the connection of the operating arrangement 36 to the bus arrangement 4 can be provided via an electric functional unit carried out as an intelligent terminal field. The intelligent terminal field is connected, on the one hand, to the bus arrangement 4 and has, on the other hand, several electric inputs and outputs for connecting the conventional electric components such as, for example, switches, sensors, and LEDs. The intelligent terminal field is configured so as to be connected to the bus arrangement 4 by electric components without their own intelligence. The intelligent terminal field in the housing 7 can be arranged as an electric functional unit on the bus arrangement 4, or can be arranged under the housing 7, for example, in a box to be mounted below.

On the bus arrangement 4 is arranged the drive unit 31 as well as other electric functional units. The electric functional units can be arranged on the bus arrangement 4 in an optionally axial position. The drive unit 31 has, aside from the drive motor, an intelligent electric control unit with a microprocessor, which is configured as a bus master. The bus master controls the data communication of the bus arrangement 4. The electric control unit can be configured for automatically recognizing and/or addressing and/or initializing electric functional units. After installing an electric functional unit, the same is automatically recognized and/or initialized and/or addressed by the electric control unit. Also a failure or removal of an electric functional unit is automatically recognized by the electric control unit and a corresponding status message is generated and/or a corresponding preselectable action, for example, an emergency opening, is initiated.

In Figure 2, a power supply unit 35 and an emergency power supply unit 34 are arranged as electric functional unit on the bus arrangement 4. The power supply unit 35 feeds into the electric energy for the functional units in the bus arrangement. In the case of an error, for example, a system failure, overheating, or overload, the power supply unit 35 generates corresponding status messages and feeds these also into the bus arrangement 4. The emergency power supply unit 34 has an accumulator which feeds, in the case of a system failure, the electric energy for the functional units into the bus arrangement 4. The emergency power supply unit 34 can be configured so that, because of the system failure generated by the power supply unit 35, it automatically takes over the electric energy supply. In another embodiment, the control unit of the drive unit can be configured for controlling the emergency power supply unit 34.

Furthermore, in Figure 2, a locking device 33 is arranged

on the bus arrangement 4. The locking device 33 has an electromechanic locking element for locking the sliding wing 1. The locking device 33 also has the locking activation and a locking monitoring. The control unit of the drive unit is configured for controlling the locking device 33. The locking device is configured so as to react to the commands locking and unlocking in that the locking device is locked or unlocked and a corresponding acknowledgment message is generated. In the case of an error, for example, the lock is jammed, the locking device 33 transmits the corresponding error message.

In Figure 2, a sensor device 32 is arranged on the bus arrangement 4. The sensor device 32 has one or several sensor(s) such as, for example, motion detectors, photoelectric barriers, photoelectric sensors. The sensor device is configured for the monitoring of the function of the connected sensors and/or for activating the control unit of the drive unit. In another embodiment, also several sensor devices can be connected to the bus arrangement.

The gateway is provided as further functional unit, which is not shown in Figure 2, and which is configured for connecting the bus arrangement 4 to an ancillary guiding equipment, for example, to a building control system.

In Figure 3, a horizontal section is shown along line A-A of Figure 1. The housing 7 of the sliding door drive 2 has a fixed mounted carrier element 71, a slide track profile 72 attached thereto, and a cover hood 77, wherein the axial length of the carrier element 71 and the slide track profile 72 as well as that of the cover hood is identical. The housing extends in horizontal direction above the wing 1, 1a and is supported by the carrier element 71 arranged between the slide track profile 72 and a structural carrier 9, preferably a carrier profile 71 supported by the structural horizontal carrier 9. The carrier element 71 is screwed via attachment screws 71b

onto the structural horizontal carrier 9. In a modified embodiment, according to Figure 3, the attachment of the carrier element or the slide track profile is also provided directly on a housing wall. To mount the slide track profile 72, the carrier element 71 has a suspending fixture 71a. The mounting of the slide track profile 72 on the carrier profile takes place via suspending and bracing to the clamping arrangement 71a arranged on the mutually facing front sides of the profiles. The cover hood 7 is attached to the slide track profile 72 in the same way, so that the carrier profile 71, the slide track profile 72, and the cover hood form a composed cube-shaped body with aligned outer sides.

The slide track profile 72 has on its inner side the slide track 72a. The slide track 72a guides the reel cars 72 in that they are arranged to be axially displaceable on the slide track 72a. The reel cars have cam rollers 73a which coact with the slide track. The cam rollers 73a run on the fixed slide track 72a, which has two mutually facing sliding surfaces in a horizontal plane. The sliding surfaces are formed on the mutually facing sides of the slide track profile 72 and bent into a convex shape. They can, however, also be configured as concave or also slanted planar surfaces.

Several cam rollers are preferably arranged one behind the other in the sliding direction, which roll off on the mutually facing sliding surfaces, that is, that the first cam rollers slide on one sliding surface, and the other cam rollers slide on the other sliding surface.

The sliding wing 1 is adjustably supported on the reel car 73 by means of a suspending and adjusting device 74. The sliding wing 1 is arranged aligned under the reel car 73 and engages with its horizontal upper edge in dependence upon the adjustment of the suspending and adjusting device 74 more or less deeply into the slide track profile 72.

Connecting to the front side of the slide track profile 72 is arranged a holding space, which is covered by the cover plate 77 suspended in the slide track profile 72. In the holding space are arranged the drive unit 31 and the functional units 3; they are the components 32, 33, 34, 35, shown in Figure 2. They are attached via an attachment groove 6 with attachment screws to the front side of the profile 72. They are electrically connected to the bus arrangement 4 arranged on the front side of the profile 72. The electric connection on the bus arrangement is shown in detail in Figure 4. Furthermore, the components 3 have a clamping arrangement 5 on their side which faces the front side of the profile 72, with which they are attached in the area of the bus arrangement 4 via a clamping arrangement.

In a horizontal plane of the holding space is arranged a conventional belt drive arrangement 76, which has a catch 75 guided by deflection rollers which are not shown. The catch 75 engages under the sideways slide track profile leg into the sliding wing plane and is attached, on the one hand, to the suspending and adjusting device 74 and, on the other hand, to a circulating thrum [trum - term not listed in dictionaries, ed.] of the drive belt arrangement 76. In the holding space, on the side wall of the slide track profile 72, above the drive belt plane, that is, on the front, are arranged the bus arrangement 4 and the mechanical attachment fixture 6. In a modified embodiment, according to Figure 3, the bus arrangement 4 and/or the mechanical attachment fixture 6 can be arranged in another area inside the housing 7, for example, on a horizontal carrier profile, which is arranged in the holding space in the area of the upper horizontal leg of the cover hood 77, or forms the same.

In the holding space are arranged the electric functional units 3 as well as the drive units 31 on the bus arrangement 4 and/or on the mechanic attachment fixture 6. The mechanic attachment fixture 6 has two grooves 61

which run parallel to the bus arrangement 4, wherein in the grooves 61 are supported displaceable groove pads 62. The electric functional units 3 have, as shown in Figure 3, screws 63 which engage into the groove stones 62 for a releasable and adjustable attachment.

Figure 4 is an enlargement of the section of the clamping arrangement 5 and the electric bus arrangement 4 of Figure 3. The bus arrangement 4 has a mounting rail arranged on the slide track profile 72 with two parallel axially running L profiles 45 and conductors and/or ribbon cables arranged between the latter. The two vertical legs of the L profiles are arranged parallel to the slide track profile 72 and face in mutually opposite directions. The horizontal leg of the L profiles 45 delimits on both sides a holding groove 41 having a rectangular cross section, which is configured for accommodating electric bus bars and/or ribbon cables. The electric bus bars form the bus lines and are configured in the rectangular holding groove 41 as two electrically conducting tracks 43a, b with the same cross section form arranged parallel and at a distance from each other. The remaining space of the holding groove 41 is filled with an elastic rubber-like isolation material 42. In a modified embodiment, also a ribbon cable can be arranged in the holding groove 41, wherein its cable conductors are configured as bus lines.

The clamping arrangement 5 is arranged between the electric functional unit 3 and the bus arrangement 4. The clamping arrangement 5 has a plastic clamp 51 which is attached to the electric functional unit, which has two clamps 52a, b which grip onto the two vertical L legs 45 of the bus arrangement 4. The clamp 51 is configured as a releasable clip connection, while the clamp 51 is made of an elastic material, for example, a plastic. The clamping arrangement 5 also has two electrically conducting contacting domes 44a, b arranged across from the bus bars 43a, b, which are in electric connection with the

electric functional units. The contacting domes are configured so that they cut through the isolation material 42 when the clamping arrangement 5 is attached to the bus arrangement 4 and come into electrically conducting contact with the electric bus bars 43a, b and produce the electric connection of the functional unit 3 to the bus arrangement.

When removing the clamping arrangement 5 from the bus arrangement 4, the contacting domes 44a, b leave behind holes in the isolation material 42. To reestablish the isolation, the isolation material is configured so as to be elastic to provide an automatic closure of the holes.

As shown in Figure 4, the two bus bars 43a, b and the complementing contacting domes 44a, b of the clamp 51 are arranged asymmetrically to exclude an inversion of the polarity by a twisting of the clamp 51 by 180°. In another embodiment, the clamp 51 can also be configured asymmetrically, for example, it can have a groove on one side which coacts with an L profile, which prevents a twisting of the clamp. The two bus bars are configured as two-wire buses, for example, a CE bus or LON powerline. The power supply of the electric functional units and the data and signal transmission take place via the same lines 43a, b.

In a modified embodiment of Figure 4, it can be provided to configure the profile housing 7 as a part of the bus arrangement, for example, a mass line and/or screening, wherein a two-wire bus in the holding groove 41 has only one conductor. It is also possible to configure the bus arrangement 4 as a three-wire bus, for example, a CAN bus or ASI bus, or as a multiwire bus. Hereby, the transmission of the electric energy and the data and signal transmission take place via separate lines.

In a modified embodiment of Figure 4 it can be provided that the clamp 51 is not attached directly to the

electric functional unit 3, but is connected to the same via a cable.

Claims

1. Automatic door or window system with a drive, preferably a sliding door drive, and with a displaceable driven wing, preferably a sliding wing or folding wing,

wherein the drive has the following components:

a fixedly mounted slide track, wherein the wing is preferably displaced in the slide track guided by cam rollers of at least one reel car,

an electric drive unit for driving the wing arranged on a fixedly mounted carrier, preferably on the slide track, or on a part connected therewith, having an electric drive motor,

as well as several electric functional units, for example, power supply units and/or locking devices and/or emergency power supply units, arranged on a fixedly mounted carrier, preferably on a slide track or on a part connected to the slide track,

characterized in that

a bus arrangement (4) is provided, which is configured for the transmission of data and signals between electric functional units and/or between electric functional units and the drive unit (31).

2. Automatic door or window system according to claim 1,

characterized in that the bus arrangement (4) is arranged on or in the slide track (72) or on a part connected to the slide track, for example, in a housing (7) of the drive.

3. Automatic door or window system according to claim 1

or 2,

characterized in that the bus arrangement (4) extends in the axial direction of the slide track (72) over a large part of the length of the slide track (72), preferably over the entire length of the slide track (72).

4. Automatic door or window system according to claims 1 to 3,

characterized in that the bus arrangement (4) is configured so that the electric functional units are optionally arranged in an axial position to the bus arrangement (4).

5. Automatic door or window system according to claim 1 to 4,

characterized in that the bus arrangement (4) has a ribbon cable.

6. Automatic door or window system according to one of the preceding claims,

characterized in that the slide track (72) has a profile housing which is rectangular or U-shaped or L-shaped in cross section, which is preferably configured as a box-shaped profile housing.

7. Automatic door or window system, according to one of the preceding claims,

characterized in that the slide track (72) or a part connected to the slide tract, for example, a housing (7) of the drive has a groove (41) for holding the bus arrangement (4).

8. Automatic door or window system, according to one of the preceding claims,

characterized in that at least one of the electric functional units has a clamping arrangement (5), preferably a suspended clamping arrangement (51) and/or a screwable clamping arrangement and/or a clippable clamping arrangement, for connecting the electric functional unit to the bus arrangement (4).

9. Automatic door or window system according to claim 8,

characterized in that the clamping arrangement (51) is configured on the electric functional unit (3) to be attached to or be one piece with said electric functional unit.

10. Automatic door or window system according to claim 8,

characterized in that the clamping arrangement (51) is configured separately and is connected via an electric cable to the electric functional unit (3).

11. Automatic door or window system, according to one of claims 8 to 10,

characterized in that the clamping arrangement (5) has at least one contacting dome, preferably several contacting domes (44a, 44b), which are automatically produced when the clamping arrangement (5) is mechanically attached to the bus arrangement (4).

12. Automatic door or window system, according to one of claims 8 to 11,

characterized in that the clamping arrangement (5) is configured so as to be asymmetric, preferably to provide a connection to the bus arrangement (4) which is free of polarity inversions.

13. Automatic door or window system, according to one of the preceding claims,

characterized in that the bus arrangement (4) has at least one electric line (43).

14. Automatic door or window system according to one of the preceding claims,

characterized in that the bus arrangement (4) has an elastic rubber-like isolation (42), in which the elastic line or the electric lines (43a, 43b) is or are guided.

15. Automatic door or window system, according to claim 14,

characterized in that the elastic rubber-like isolation (42) is configured to automatically cover an area of a contact point after the removal of a contacting domes (44a, b).

16. Automatic door or window system, according to one of the preceding claims,

characterized in that the bus arrangement (4) has a mechanic attachment fixture (6) for mechanically fixing electric functional units.

17. Automatic door or window system, according to claim

16,

characterized in that the clamping arrangement (5) is configured so that the electric connection to the bus arrangement (4) takes place simultaneously with the mechanical fixing of the electric functional units to the mechanic attachment fixture (6).

18. Automatic door or window system according to claim 16 or 17,

characterized in that the clamping arrangement (5) is configured as a part of the mechanical attachment fixture (6) or replaces said mechanical attachment fixture.

19. Automatic door or window system, according to one of the preceding claims,

characterized in that the bus arrangement (4) has a two-wire bus, for example, a CE bus or LON powerline, wherein it is preferably provided that the bus arrangement (4) for data and/or signals transmission and power supply is configured [sic] via the same electric lines.

20. Automatic door or window system, according to one of the preceding claims,

characterized in that the bus arrangement (4) has a three-wire bus or multiwire bus, preferably a CAN or ASI.

21. Automatic door or window system, according to one of the preceding claims,

characterized in that the bus arrangement (4) is configured for connection to a building control system,

for example, a EIB or LON.

22. Automatic door or window system, according to one of the preceding claims,

characterized in that the slide track (72) is configured so as to be electrically conducting and has a part of the bus arrangement (4), preferably the mass line and/or screening.

23. Automatic door or window system, according to one of the preceding claims,

characterized in that the bus arrangement (4) is configured for connection to electric functional units with and/or without their own intelligence.

24. Automatic door or window system, according to one of the preceding claims,

characterized in that at least one of the electric functional units has its own intelligence, preferably a microprocessor.

25. Automatic door or window system, according to one of the preceding claims,

characterized in that the electric drive unit (31) is configured as a bus master.

26. Automatic door or window system, according to one of the preceding claims,

characterized in that the electric drive unit (31) has an

electric control unit, preferably with a microprocessor, and at least one drive motor controlled by the control unit.

27. Automatic door or window system, according to one of the preceding claims,

characterized in that the electric drive unit (31) is configured for automatically recognizing and/or addressing and/or programming and/or initializing and/or inquiring connected electric functional units.

28. Automatic door or window system, according to claim 26 or 27,

characterized in that the control unit, preferably the microprocessor, is connected to the bus arrangement (4).

29. Automatic door or window system, according to one of claims 26 to 28,

characterized in that the control unit, preferably the microprocessor, coacts with the bus arrangement (4) and is configured for automatically recognizing and/or addressing and/or programming and/or initializing and/or inquiring electric functional units (3) connected to the bus arrangement (4).

30. Automatic door or window system, according to one of claims 26 to 29,

characterized in that at least one electric functional unit (3) has a response unit, preferably a microprocessor, which is configured so as to be automatically recognized and/or addressed and/or programmed and/or initialized and/or inquired.

31. Automatic door or window system, according to one of the preceding claims,

characterized in that an electric functional unit is configured as a redundant safety device for monitoring and/or replacing the control unit of the drive unit.

32. Automatic door or window system, according to one of the preceding claims,

characterized in that one or several of the electric functional units have their own monitoring device, which is preferably configured for the monitoring of the electric functional unit and/or for transmitting status messages and/or for transmitting error messages.

33. Automatic door or window system, according to one of the preceding claims,

characterized in that an electric functional unit is configured as an intelligent terminal field for connecting conventionally wired components, for example, an operating switch.

34. Automatic door or window system, according to one of the preceding claims,

characterized in that an electric functional unit is configured as a sensor device (32), preferably a motion sensor and/or photoelectric barrier.

35. Automatic door or window system, according to claim 34,

characterized in that the sensor device (32) is configured so as to be programmable and/or adjustable, preferably in that the sensitivity and/or the directional characteristic of the sensor device is programmable and/or adjustable.

36. Automatic door or window system, according to claim 34 or 35,

characterized in that the sensor device (32) is configured so as to be programmable and/or adjustable, preferably that the sensitivity and/or the directional characteristic of the sensor device (32) is programmable and/or adjustable via the bus arrangement (4).

37. Automatic door or window system, according to one of the preceding claims,

characterized in that an operating arrangement (36) is provided, which has a controller and is preferably arranged outside of the housing.

38. Automatic door or window system, according to claim 37,

characterized in that the operating arrangement (36) is configured for the connection to the bus arrangement (4).

39. Automatic door or window system, according to claim 37 or 38,

characterized in that the operating arrangement (36) is configured for the adjustment and/or programming of parameters and/or modes of operation and/or display and/or storage of status messages and/or services data.

40. Automatic door or window system, according to one of the preceding claims,

characterized in that several functional units can be optionally selected or combined with each other to produce different embodiments of sliding door drives.

List of Reference Numerals

1 Wing
1a Fixed field wing
1b Fanlight wing
2 Sliding door drive
3 Component
31 Drive unit
32 Sensor device
33 Locking device
34 Emergency power supply unit
35 Power supply unit
36 Operating arrangement
4 Bus arrangement
41 Holding groove
42 Isolation
43a Conductor
43b Conductor
44a Contacting dome
44b Contacting dome
45 L profile
5 Clamping arrangement
51 System terminal
52a Clamp
52b Clamp
6 Mechanic attachment fixture
61 Attachment groove
62 Groove pads
63 Screw
7 Housing
71 Carrier element
71a Groove
71b Screw
72 Slide track profile
72a Slide track
73 Reel car
73a Cam roller
74 Suspending and adjusting device
75 Catch

76 Belt drive arrangement

77 Cover hood

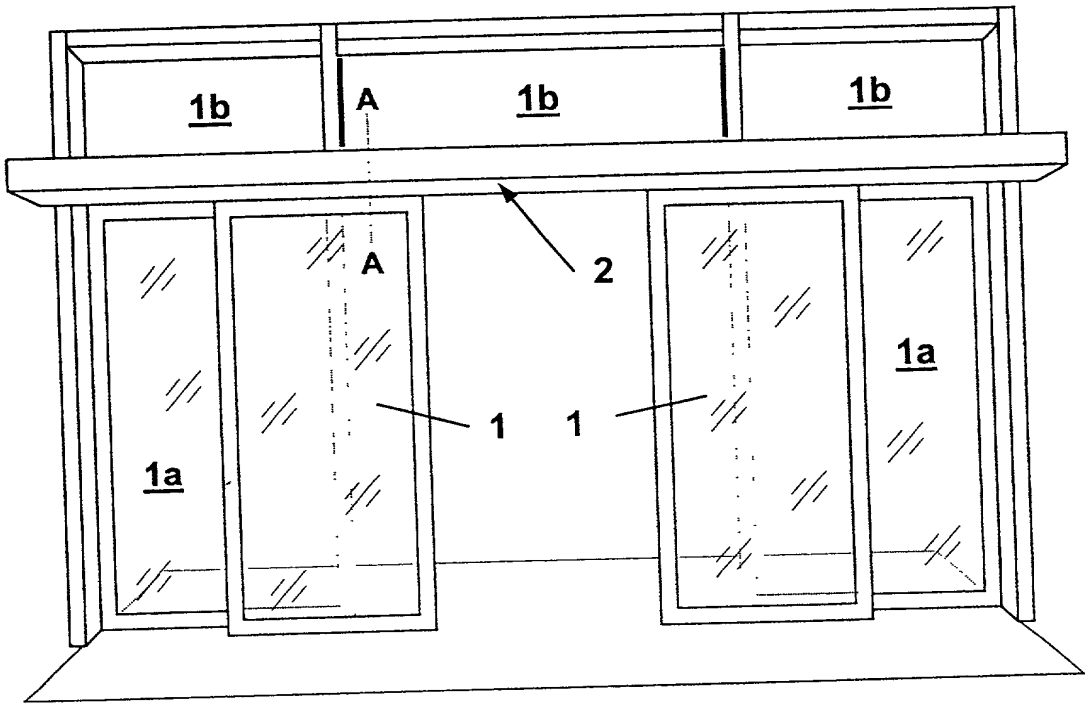
9 Carrier

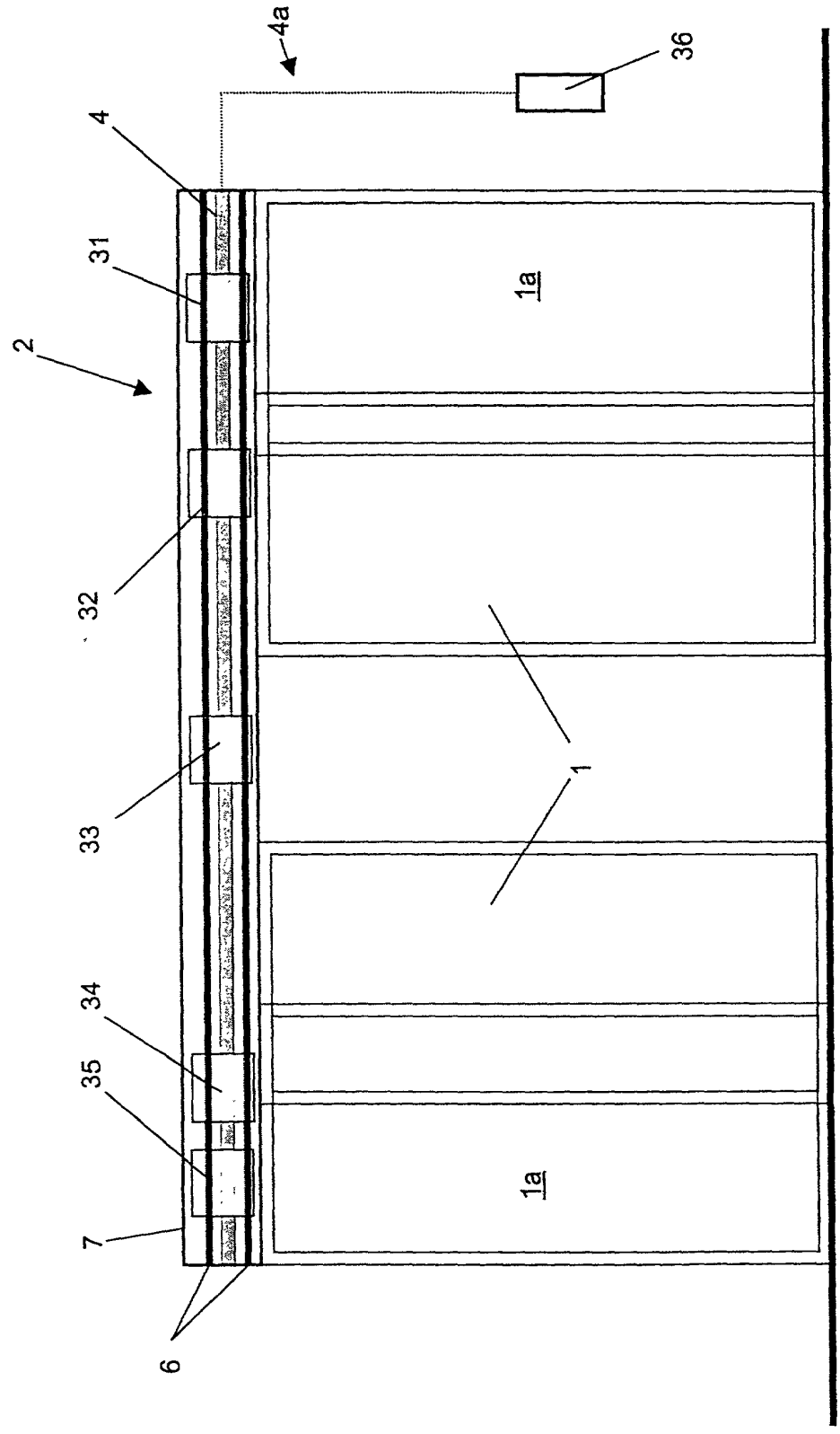
Abstract

An automatic door or window system is described, which has a sliding door drive (2) and two counter-sliding driven sliding wings (1). On the slide track (72) of the drive are arranged several electric functional units and the drive unit (31). The sliding wing (1) is displaceably guided via reel cars in the slide track (72).

To obtain a simple construction and a universal utilization of the door or window system, the slide track (72) has a bus arrangement (4) for data and/or signal transmission between the electric functional units and/or between the electric functional units and the drive unit (31).

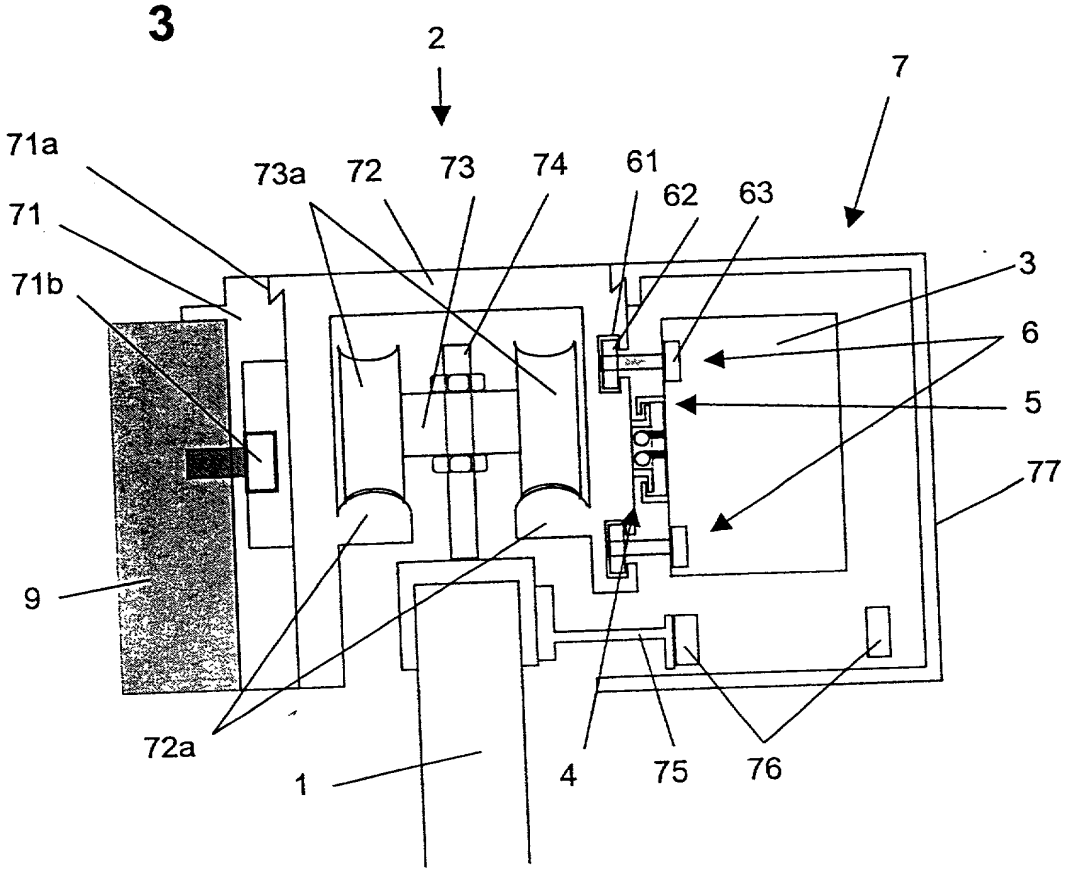
1





2

3



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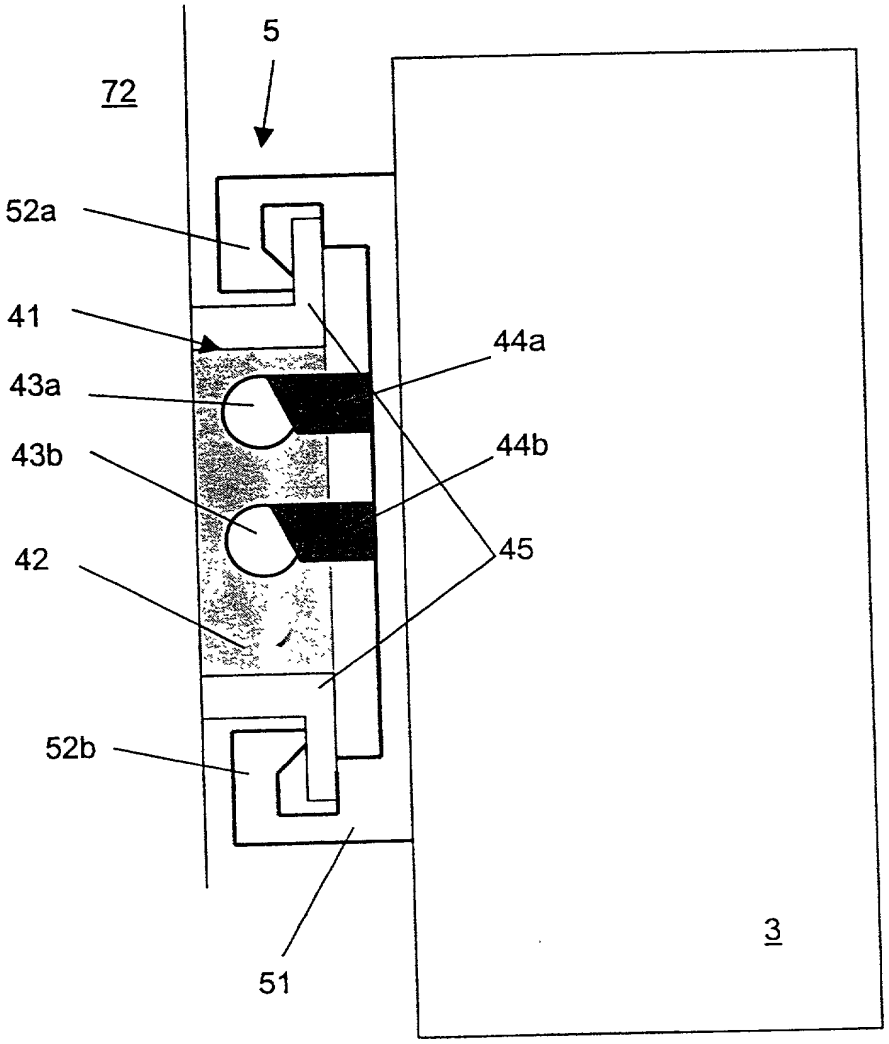

#3

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (includes Reference to PCT International Applications)	ATTORNEY'S DOCKET NUMBER 1318/49872

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

the specification of which (check only one item below):

[ ] is attached hereto.

[ ] was filed as United States application
Serial No. _____
on _____
and was amended
on _____ (if applicable).

[X] was filed as PCT international application
Number PCT/EP 00/08619
on 4 September 2000
and was amended under PCT Article 19
on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations. §1.56(a).

I hereby claim foreign priority benefits under Title 35, United State Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (if PCT indicate PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
Germany	DE 199 42 339.3	6 September 1999	[X] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No

Combined Declaration For Patent Application and Power of Attorney (Continued) (includes Reference to PCT international Applications	ATTORNEY'S DOCKET NUMBER 1318/49872

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national of PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120

U.S. APPLICATIONS		STATUS *(Check one)*		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED

PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NO	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (IF ANY)			

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true: and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE 20.07.01	Date 20.07.01	DATE 29.07.01